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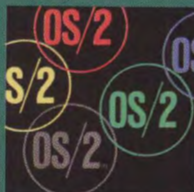
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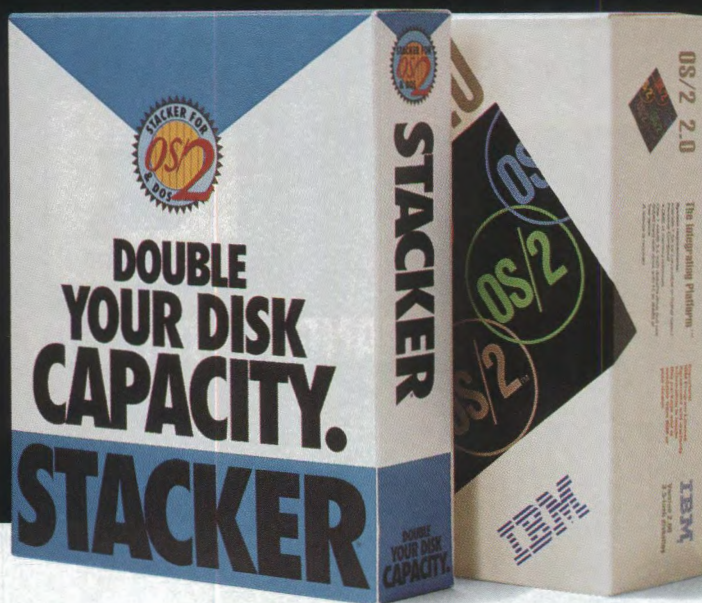
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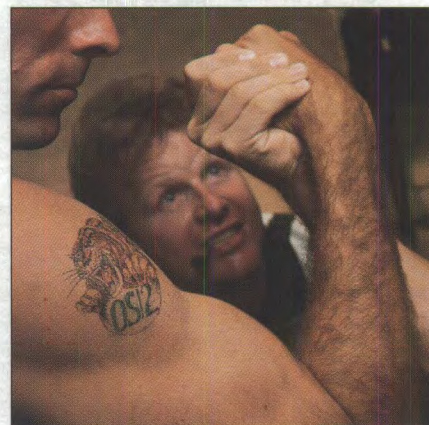
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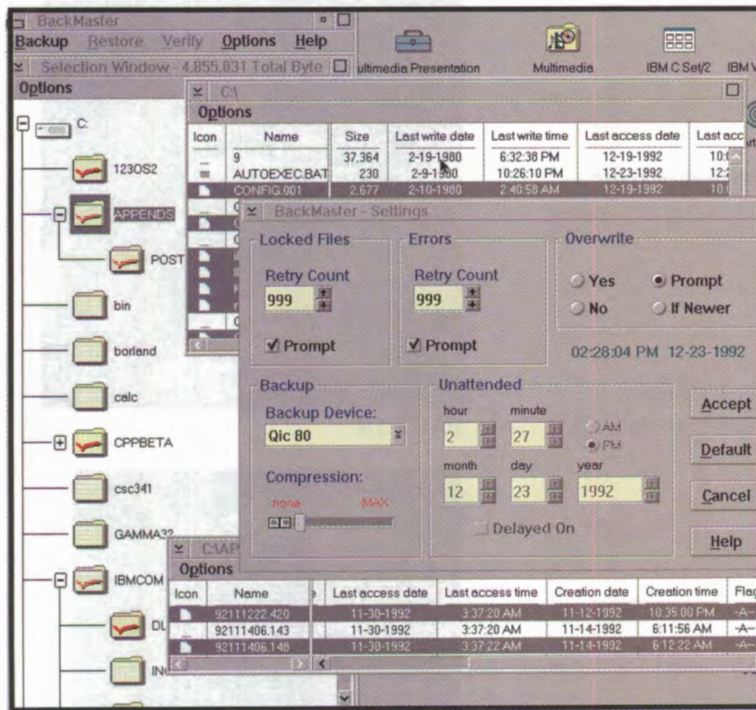
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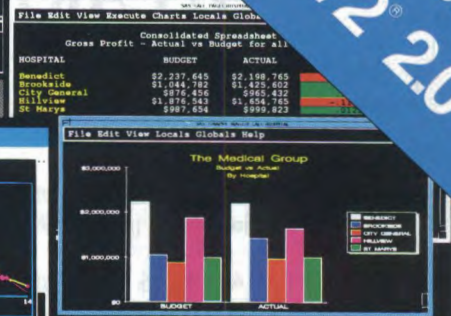
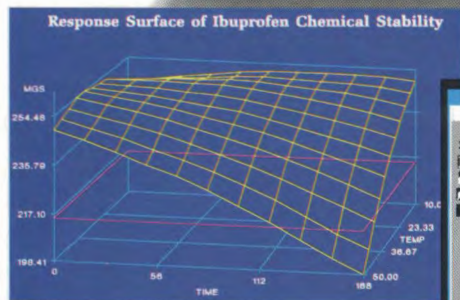
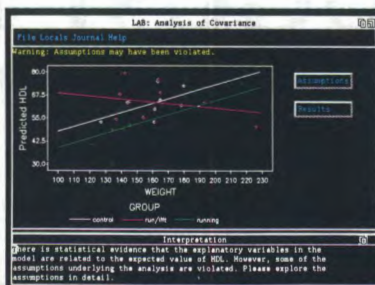
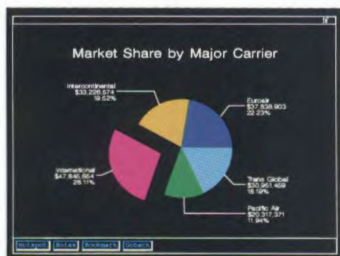


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PUBLISHER'S MEMO

It's not the little boxes that count. It's the big boxes. For a long time, IBM has been focusing on shrink-wrapped sales. Yes, for a brief while it was useful to pop the cork every time another million milestone was passed. The three millionth copy may be purchased just before Fall COMDEX.

Shrink-wrapped sales have allowed PSP officials to declare that more than 85 percent of distributed copies are preloaded but actually purchased in stores. Implicit if not actually verbalized is the notion that Microsoft's 25 million user installed base is an exaggeration because so much of it is just "preloaded." The naive thinking is that millions of Joes flip the red switch, ignore their Windows and use traditional DOS apps. Hence, the huge installed base for Windows is data dung.

I think we all know that's just not the case. There may not be 25 million computer screens with open Windows. But surely there are enough preloaded Windows systems in use to ensure that the Windows crowd is five or six times the size of the OS/2 crowd. What's more, to many ordinary users, Windows is a given. It pops up when the system boots. Can anyone question why thousands of Windows applications came onto the market?

OS/2 is going nowhere fast until IBM convinces leading computer manufacturers to preload OS/2 en masse. It's the big boxes that count—not the little ones. OS/2 and some basic Workplace Shell should appear from a new computer's first whirr. Then we can stop the OS shootouts, the 101-reason advertising supplements, the lies about installation and the abacus counts of the installed base. Software companies will no longer question continued OS/2 development. They will rush to the platform—because the computing public will be waiting for them there.

Widespread preloading may not be far off. Compaq, Unisys and Everex recently announced they would "distribute" shrink-wrapped boxes of OS/2 with their systems, mostly to corporate customers. Northgate and AST announced they would selectively preload on request. Those are certainly exciting, significant developments.

But mere distribution of the little boxes and even selective preloading on request still places the vagaries of installation and system indecision between every user and the benefits of OS/2. So while the Compaq et al. announcement does not mean OS/2 has turned the corner, it does mean that good news is just around the corner. IBM could accelerate the process with three aggressive campaigns.

- **A reality offensive.** IBM must convince computer manufacturers and retailers that NT is really not there for the average desktop computer. No bash, just some horse sense. Not even Microsoft is pretending that NT will compete in the consumer arena. Moreover, Bill Gates' recast vision of NT as a high-end corporate system to compete with IBM is but an apparition of things not to come. Microsoft simply lacks the decentralized

nationwide infrastructure to service mission-critical applications that can't afford to be down for even a half hour. IBM can. Microsoft can't. But the computer world is so reluctant to believe anything IBM says—burnt fingers heal slowly—that rusty old preloading decisions are simply stuck on REPEAT. So Big Blue needs to undertake a big sales job on a disbelieving world.

- **An installation help offensive.** One of the first lies IBM told me when I started this magazine was that they had never heard of any installation problems. Earth to IBM, Earth to IBM, come in please. The truth is that a gamut of sellers from the corner retailer to biggies such as Digital are extremely reluctant to install OS/2. And installers complain the help lines they can access are not helpful at all. IBM needs to replace its user-based OS/2 Road Show with a retailer-based road show. Then reassign the newly designated "OS/2 marketing" groupies to installation help duty—24 hours per day. Why not train and certify installers at the retail level. You've heard of Mr. Goodwrench? How about Mr. Goodchip? One store without installation fear is worth 100 consumers with a piqued interest in OS/2.

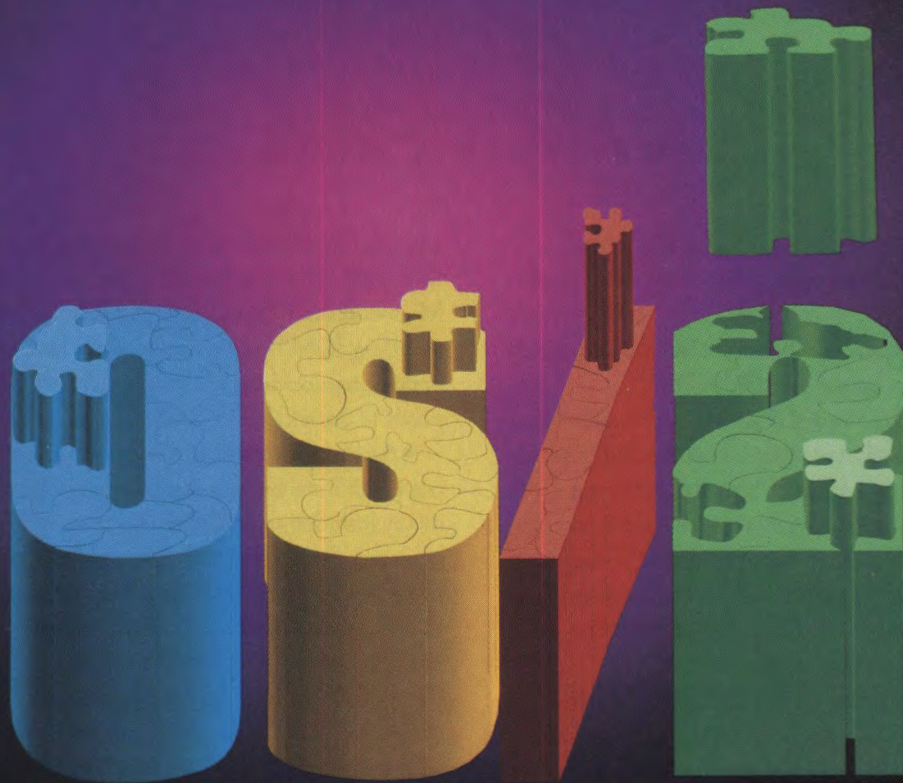
- **A shelving offense.** IBM is still covering up its complete inability to get computer stores to display OS/2 and related software. Big Blue was simply unaware of how much lead time is required to secure shelf exposure. Up and running is not enough. OS/2 apps need to be finger-tip available. IBM needs to stimulate demand with a continued focus on the value of OS/2 apps. And tell the retailers. Advertising outside of the computer media with such programs as the Roadblock is vital. And then consider local radio and newspaper support of local retail. Make retailing work for the retailers, and they will deliver.

The world's desktops may double in number within the next two years. Powerful new machines such as the 486, Pentium-based machines and the PowerPC will be widespread. When desktops double, they need to double with OS/2 humming inside ready to work its magic. That's IBM's critical mission.

And now a special thanks to all those who have chosen the OS/2 Professional Interchange October 17-20 in Palm Springs, California, as the OS/2 event of the year. We have gathered more technical, marketing and development expertise under one roof than any other OS/2 confab to date. And most of all, it's going to be great fun. John Dvorak, Will Zachmann, John Soyring, Brad Kliever, Michael Kogan and I look forward to helping you move OS/2 into its next great year.

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Comments, criticisms and observations

Pul-leeze

"Oh, pul-leeze! I suppose every columnist is entitled to a soap box but Dvorak [May Dvorak's View] goes beyond what I would expect to read in a magazine with the word "professional" in its title.

I am no fan of Microsoft and believe they have done much to repress innovation in the PC industry. They are a behemoth that no longer listens to the world outside and will surely pay the price for their arrogance, just like IBM has.

Dvorak, however, does nothing in his column to enlighten us as to what a Gateless world would truly be like. Your own editorial, in contrast, is thought provoking and substantive [May Publisher's Memo].

Then there are the churlish comments about Gates' bride to be. What planet is Dvorak living on? Could it be that this woman enjoys her career and is good at what she does? Doesn't she have the right to be recognized as an individual able to make choices reflecting her own values rather than those of Dvorak's two-dimensional world?

This is a lazily written column, without substance, on a company whose actions affect us all. I expect better.

Stewart Hall

Downsview, Toronto

Show and tell

Here's another suggestion for promoting OS/2:

Mr. Dvorak has seven suggestions for promoting OS/2 [March/April Dvorak's View]. He, however, missed an important point. OS/2 marketers need to address the word-of-mouth avenue.

Instead of telling people that OS/2 2.1 is an excellent product, show them that it is. OS/2 2.1 is a mature operating system that can stand on its own merits. Sell OS/2 2.1 so cheaply for 90 days that the average Windows user can't resist the temptation to try it. Get the user hooked on OS/2 2.1, and then

the marketers can reap the benefits of word-of-mouth advertising.

There are lots of ads in trade journals, but these ads are not nearly as influential as are the comments my fellow computer users make to me over a cup of coffee.

John P. Steiner

Monterey, CA

Hear Ye! Hear Me!

Yes! OS/2 2.1 is out in the stores. Am I excited? Yes I am!

I just got finished reading "The Borg Is Here" [May Special Report]. Very well put I must add! I love this magazine! I am writing this letter on my home computer and the word processor is DeScribe 4.0 Rev. C. Yes, I spent the money to purchase a true 32-bit word processor. I love it, but I feel that if it had a grammar checker and some minor changes in the way it handles tables (sizing and resizing) it would be perfect! Still, DeScribe is as close as it comes without actually hitting the perfect mark.

The point you made in the May Publisher's Memo is well taken. I have never told any one other than my closest friends that I think MS Windows is a poor environment, but I have said it just the same. As a small consultant I am constantly faced with installing Windows on computers and I would rather install OS/2. However there are people who purchase 386SX computers or 386/486DX with 4 meg of RAM. This type of system is unsuitable for OS/2. DeScribe requires 8 meg of RAM, likewise R:Base for OS/2 also requires 8 meg of RAM. I firmly believe that when a person buys a computer, it becomes a personal extension of their self. So to bad mouth their system is to insult them! I choose the approach that to augment their system to a new power level they should move to OS/2. This enhances the functionality of the software they now have and brings in the possibility of them "needing" to pur-

chase native OS/2 applications for the increased productivity gains.

In closing I wish to say thank you for this magazine. IBM if you are listening, thank you for OS/2 and I hope that this marketing void you are in stops very soon. IBM make it intelligent (marketing) and friendly and effective! Everyone can benefit from OS/2!

Vernon R. Engstrom

Micro Data Consultants

Ft. Worth, TX

To Borg, or not to Borg

I just finished reading the May issue of *OS/2 Professional* and I am glad to see you have vowed to cease Windows bashing, realizing how this alienates some readers.

What prompted me to write, however, was the article on OS/2 v. 2.1 [May Special Report]. The references made, by the photos and text, to the Star Trek: The Next Generation characters The Borg confused me. I am a Star Trek fan and, as I recall, The Borg were "bad guys." Their purpose was to absorb the technology and resources of other species and cultures. Once conquered by The Borg, the defeated lost all traces of individuality and personality, becoming devoted to the combined will of these machine men. Is this really the type of image IBM wants to portray for the newest version of OS/2?

Robert Caudillo, President

Key Strokes

Scottsbluff, NE

For a magazine that calls itself the *OS/2 Professional*, your May cover featuring Captain Jean Luc Picard (The Borg Is Here) was decidedly unprofessional. Hey, I like Star Trek too, but remember, you're writing about a serious operating system, not the latest Nintendo game cartridge. How can you establish credibility in the corporate arena when your magazine has the cover of a geeky, third-rate sci-fi fanzine?

continued on page 14

THIS *or* THIS?

DCF/2—DISK COMPRESSION FOR OS/2



Let's face it, the price for OS/2's additional power is disk space—anywhere from 20 to 50 megabytes depending on system options and available memory. The DCF/2 can reduce this space requirement so that even small-disk laptop computers can enjoy the 32-bit multitasking power of OS/2.

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BYTES & PIECES

News and trivialities, important and obscure

Compaq confusion

Compaq Corporation's recent announcement at PC EXPO that it was distributing boxes of OS/2 to corporate customers was met with both elation and confusion by IBM officials and those within the OS/2 community. Many of those hearing Compaq's senior vice president Gary Stimac describe the program during a press conference believed Compaq was announcing a major OS/2 preloading campaign that would have turned the corner on OS/2 growth. The list of those who believed that includes senior PSP officials, IBM press relations people, the top execs of some of the leading OS/2 software development firms and indeed several reporters covering the press conference.

But later, when *OS/2 Professional* called Compaq to confirm the scope of the "preloading," Compaq denied it was preloading, and pointed to its own press release which made clear it was only "distributing" shrink-wrapped boxes of OS/2 2.1. The distribution plan is being hailed as a major step in mass proliferation of OS/2. But many are still waiting for the day when OS/2 will be commonly preloaded in the average PC in the same way Windows has been for some time.

Edwin Black

Let the chips rise

Kneejerk increases since July 4 in the price of DRAM has many wondering whether

they are being gouged.

Sumitono Chemical Company is responsible for a reported 60 percent of the epoxy resin supply needed to manufacture DRAM. A July 4 fire at the Sumitono plant in Japan disrupted that supply. There was enough epoxy resin in the pipeline to last manufacturers for months, but prices began a steep ascent almost immediately.

Before the fire, dealers were quoting \$30 to \$48 per megabyte. Within days of the fire, some people were being charged as much as \$80 per megabyte. Some United States firms are now discussing jumping into the business since it will take Sumitono at least a year to rebuild its plant which is governed by intense quality control factors. But profit margins are skimpy in the epoxy resin market, requiring volume sales. So no decisions have been made. In the meantime, those newcomers to OS/2 needing an extra four-some of DRAM may find the cost to be higher than necessary.

The real shortage and chip scalping may occur early next year when the pipeline draws down and scarcity is real.

Edwin Black

Dimpfel added to Interchange

Lois Dimpfel, one of OS/2's most ebullient speakers, has been added to the lineup of keynote speakers at The OS/2 Professional Interchange, October 17-20 in Palm

Springs. Dimpfel heads up the Boca Raton lab for PSP. She joins IBM's John Soyring, as well as journalists Edwin Black, John Dvorak, and Will Zachmann for the dynamic keynote lineup.

Eli Allen

Here's the Scoop!

Digitalk devotees will want to stay in the know by making sure they're getting the straight *Scoop*. More than a convenient pun, the *Scoop* is Digitalk's well-done information-packed quarterly newsletter. It's the official source for information on new products, product enhancements and upgrades. It's also a handy way to find out about Digitalk users groups, training, special events and other activities—many of which have an OS/2 slant. The *Scoop's* second issue for 1993, for example, announced new and expanded product support policies, several product upgrades and a new product called Team/V—a group development tool for Smalltalk/V for OS/2.

The *Scoop* announces the details of coming events, such as Digitalk's Developers Conference, Digitalk Seminars and technology shows where Digitalk will be exhibiting. You'll also get inside information on training opportunities and organizations that specialize in providing training, consulting and custom development for Smalltalk/V and other Digitalk products.

Anyone interested in the *Scoop* can contact Barb

Noparstak, (310) 337-3135 at Digitalk.

Herb Tyson



OS/2 Professional Awards at Interchange

OS/2 Professional has announced its First Annual Awards for excellence and commitment within the OS/2 world. The awards will be presented at a special ceremony at The OS/2 Professional Interchange, October 17, in Palm Springs, California.

Ten categories have been selected to recognize individuals, companies and products: OS/2 Pro of the Year; Best New Application—Editor's Choice; Best New Application—Readers' Choice; Best Hardware; IBM Outstanding Executive Achievement Award; Corporate Commitment Award; Team OS/2 Award; and the Marketing Award. The tenth prize is the OS/2 Media Award which will recognize journalistic excellence in the independent media on the subject of OS/2. Information about the awards can be found on page 10 or by calling the OS/2 Hotline, (301) 770-4OS2. ♦

INPUT

continued from page 11

Michael J. Perry
South Windsor, CT

[Editor's note: Borg is IBM's code name for OS/2 2.1.]

Since receiving The Borg Is Here issue [May], a friend using UNIX wanted a scanned image of the magazine to use for his x-terminal screen background. Now Windows and OS/2 users to whom I've shown the magazine want a Borg Is Here cover image for their desktops too. Is it possible for you to put a suitable file on a bulletin board somewhere?

James Sutter
INTERNET/MCI ID: 376-5414

The May issue of *OS/2 Professional* arrived today. I saw the cover and could only say "Cool, way cool!" Kudos to the *OS/2 Professional* art department.

I think *OS/2 Professional* ought to blow this thing up into a poster and sell it. I'd love to put one up in my office.

John Bodnar
The University of Texas
Austin, TX

[Editor's note: Posters of the May "Borg" cover, suitable for framing, are now available. See page 57, this issue, for an order blank.]

FaxWorks feedback

I want to thank *OS/2 Professional* for Herb Tyson's fine review of the FaxWorks OS/2 products [May DOT EXE].

We take user feedback very seriously, and we are constantly working to improve the products. For example, Mr. Tyson will be happy to know that his suggestion about a separate directory for storing faxes is already in beta testing, and will be included in the next

release of FaxWorks OS/2.

We are puzzled and concerned, however, by Mr. Tyson's recommendation to buy a "real" fax machine for receiving because of deficiencies with computer-based fax hardware. The fax data on the telephone line is identical for both fax machines and computer fax hardware, and contrary to what Mr. Tyson suggests, there is no ambiguity in signaling the end of the fax document. The fax specifications are quite complete and apply to both fax machines and computer fax hardware.

It is true, however, that not all fax hardware is created equal. If fax devices adhere to the specifications, the sending fax device knows when a fax was not completely received, and the sender will retry the transmission.

I'm glad that Mr. Tyson liked FaxWorks OS/2, and I appreciate the

continued on page 82

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-- Edward Mendelson,
Contributing Editor, PC Magazine

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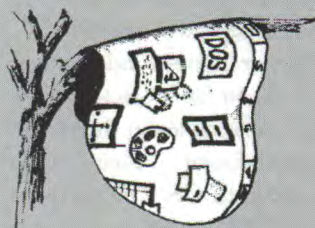
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Microsoft Losing Big in the OS Wars

BY WILLIAM F. ZACHMANN

Two of the worst mistakes in war are to overestimate one's own strength and to underestimate the enemy's. In the "OS Wars of the Early 1990s," Microsoft made both errors—and in spades. The result: Microsoft is now in serious danger not only of not winning, but of losing the war quite possibly in a rout. Don't let Microsoft's recently acquired modesty concerning its aims and expectations for Windows NT fool you. NT was originally meant to run well on any system that would run OS/2 well. It was supposed to be Microsoft's OS/2 killer, not the specialized high-end, server-oriented product that Microsoft would now like to pretend that it was designed to be all along.

Of course, initially Microsoft thought that OS/2 wouldn't even need killing. They thought IBM wouldn't be able to keep it alive in the first place. In his infamous May 16, 1991, memo, Bill Gates wrote disdainfully (and overconfidently) of what he said was IBM's "poor code, poor design, poor process and other overhead." Microsoft's Steve Ballmer confidently predicted that IBM would never be able to get Windows applications to run on OS/2.

But just in case IBM somehow managed to keep OS/2 barely clinging to life, Windows NT was to administer the *coup de grace* that would finally dispatch OS/2 to software heaven. That's obvious from its original specifications, which promised to run multiple applications well on any system with a 386 processor and 8MB of memory, and to run 16-bit DOS and Windows applications smoothly.

In other words, Windows NT was supposed to have resource requirements no greater than those of OS/2, to do everything OS/2 could do but better. Plus, NT was designed to accomplish things OS/2 couldn't at all, such as symmetric multiprocessing, portability to RISC architectures and provide support for POSIX and for government certified C2-level security. According to the lore Bill Gates was weaving, OS/2 didn't have a chance.

It didn't work out that way. The poor bozos at IBM who sup-

posedly couldn't code their way out of a paper bag did produce an outstanding, rapidly growing, operating system in OS/2 2.1. Meanwhile, Microsoft's software geniuses nearly failed to deliver Windows NT.

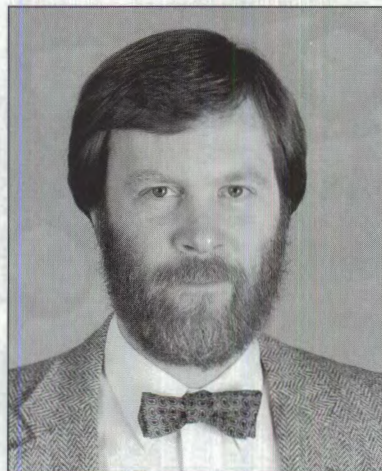
For a while it looked like Microsoft was going to be able to sell the notion that because Windows 3.0/3.1 was so successful, Windows NT must be equally successful *ipso facto*. But the air decisively rushed out of that balloon last spring at COMDEX Spring/Windows World in Atlanta with Microsoft's embarrassing "introduction" of a product that wasn't near ready to ship. Nor did it appear at the recent PC EXPO in New York.

Having once more failed to keep its promises about Windows NT, Microsoft immediately began to lower expectations for NT, purveying more new promises about "Chicago," "Microsoft at Work" and so forth. Microsoft's credibility, however, is starting to wear thin. How many times can you successfully distract attention from one promise made by making two or three new ones?

Microsoft can now be likened to a consumer who charged his credit cards to the limit, is unable to pay them off and then starts using brand new credit cards to borrow cash to pay interest-only payments on the old ones. The problem, of course, is that payment of the principle must ultimately be made. Microsoft needs to stop making more promises and to start delivering on those already made or risk credibility bankruptcy.

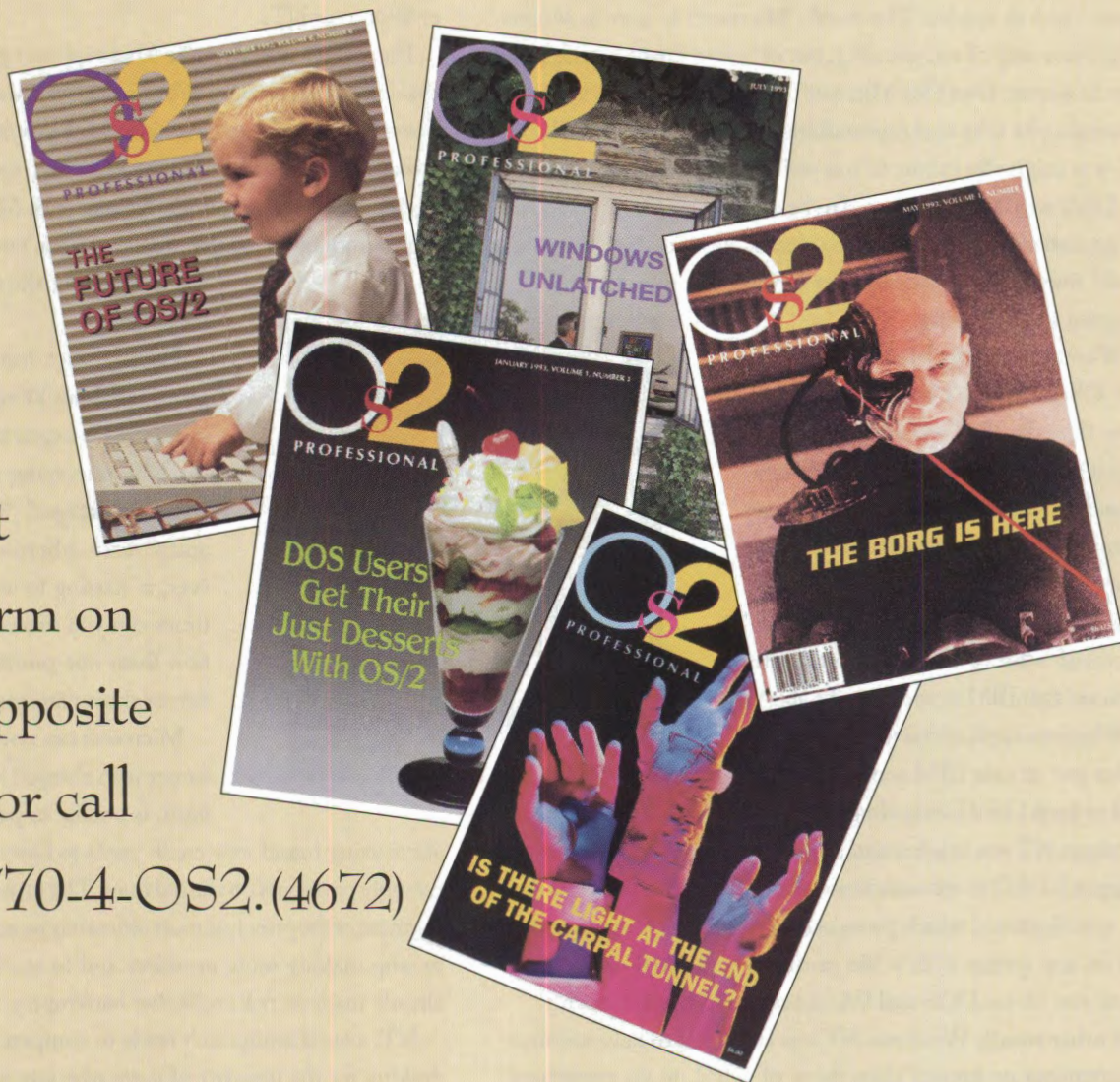
NT, even if ready, isn't ready to compete on the typical office desktop for the majority of users who operate on 386 and above systems. NT's memory requirement of 16MB or more for practical use is, in itself, sufficient to rule it out as a viable option for all but a small minority of the installed base of 386 and 486 systems.

Worse, even with sufficient memory, NT doesn't do nearly as good a job as OS/2 2.1 does of running 16-bit DOS and Windows applications that users already have. OS/2 2.1 not only runs



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ZACHMANN'S VIEW

more of these applications than NT can, but it typically runs them faster, with greater compatibility and with more configuration options.

As recently as a few months ago, it still looked like NT would at least have the advantage of a wider range of native 32-bit applications than OS/2 had. But growing recognition by software developers that NT is likely to sell few copies over the next year or two has taken much of the wind out of NT's prospective application sails. At the same time, heavy-duty OS/2 applications are finally shipping from major vendors like Lotus, WordPerfect and Computer Associates as well as from innovative OS/2 vendors such as DeScribe. NT's assumed lead in applications is evaporating like water spilled in the desert.

Far from the OS/2 killer it was supposed to be, NT has proved not even to be a serious competitor for OS/2 on the desktop. Microsoft must now rely on "Chicago" to pull its bacon from the fire and try to stop OS/2's accelerating advance.

Make no mistake about it: If Microsoft loses the desktop to OS/2, Microsoft will lose the war. Chances of that now look more likely than ever. ♦

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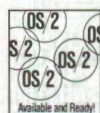
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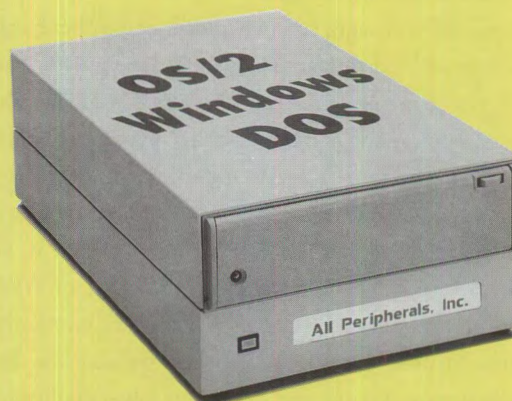
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Circle #78

OS/2 Professional wanted to compare OS/2 2.1 and Windows NT 3.1, but with a twist. We commissioned two independent comparison reviews—without telling either author about the other's assignment. The reason? To give our readers the benefit of two acknowledged experts working independently on an identical project. NT 3.1 is expected to ship sometime soon. When it finally does appear, these twin comparisons should help you understand the tug of war between the two multitasking systems and how they relate to your specific situation.

OS/2 2.1

BY MARK MINASI

If you were living about 100 years ago, and if you were technologically minded, you would probably be reading about a great debate sweeping the country. Two large companies were pitted one against the other in a fight to the death over standards. Once in place, these standards would remain cast in stone for a good long time. The champion of one standard was a charismatic and popular figure. He transformed this jousting from a difference between two business rivals to a public showdown—and he lost. Thomas Edison lost his duel with Westinghouse over whether electricity would be transmitted via direct current (which would have garnered huge profits for Edison despite its questionable utility for long-distance power transmission) or alternating current. In this match, the standard that won was probably the best, at least for the users.

If you lived just 15 years ago, you may recall yet another battle. A new technology offered the regular Joe and Jane greater control over their lives, eliminating the shackles that three major corporations placed upon many people's evening schedules. Again, two protagonists dueled for the hearts and minds of the users of this new technology—and this time the wrong one lost. Video-cassette recorders made it possible for people to watch TV, but not necessarily at the times dictated by CBS, NBC or ABC. Sony's Beta format was the better quality of the two competing standards and is still used in many professional studios today. But VHS had the better marketing, and despite its lower quality and bulkier tapes, it won. Many people argue that despite Beta's superiority, it offered superiority that we didn't need: a superiority that would have raised the price of video equipment and hindered its evolution into the mass-market technology it has become today.

Bill Gates is something of a Thomas Edison. He holds the public's eye in much the same way that the Wizard of Menlo Park did, and he handles his competition with the same kind of ruthlessness that Edison used on his competitors. Today he's touting

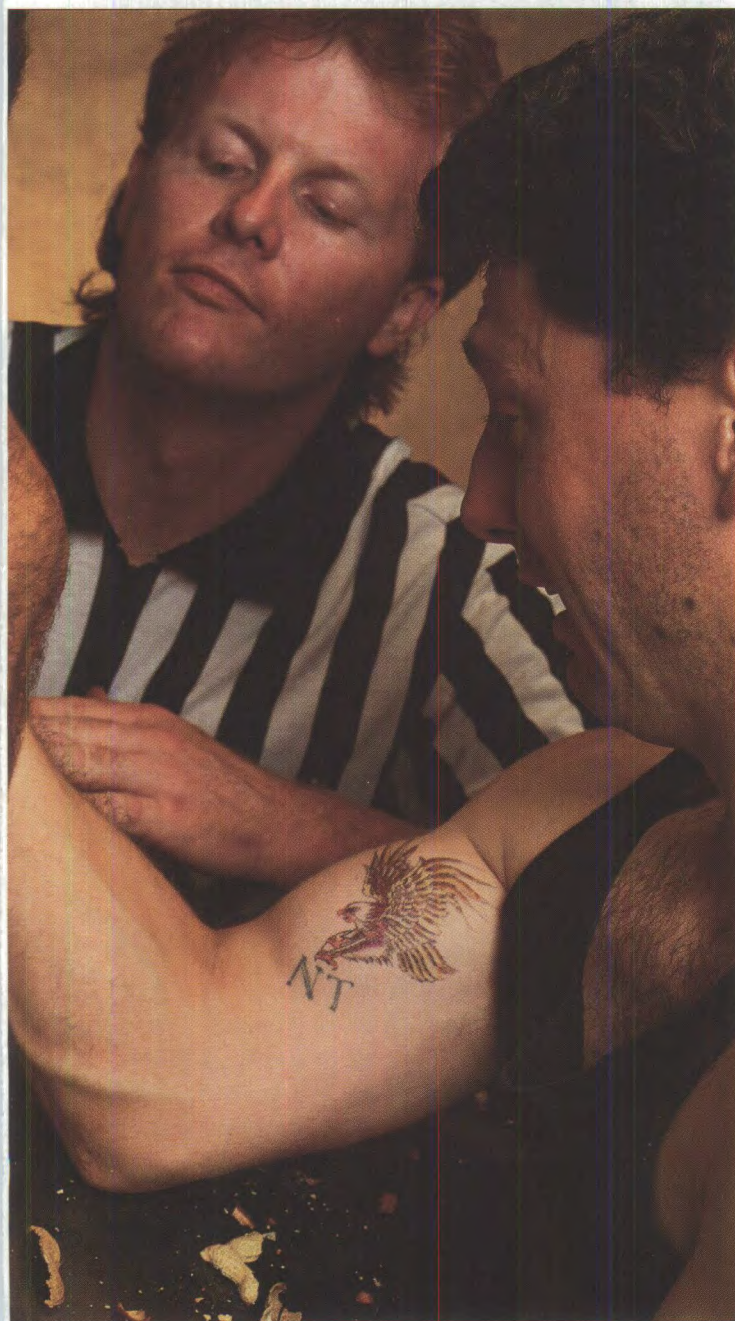
continued on page 22



Photos: Tom Reed

vs. Windows NT

BY MICHAEL S. KOGAN



Only when you run OS/2 2.1 and Windows NT 3.1 side by side can you finally decide which operating system truly suits your needs. As you examine both, you should ask yourself what features will fulfill your current demands and anticipate your needs for the rest of the 1990s? As the leading competitors for the desktops of users and corporations across the world, NT and OS/2 offer an interesting study of comparison and contrast in the world of 32-bit computing.

Corporate needs may very well determine the future directions for us all. With the advent of 32-bit microprocessors, operating systems and network technology, personal computers can provide a viable platform for legacy applications which once resided exclusively on mainframes or minicomputers. At the same time, an increased focus on reducing costs and increasing productivity has given corporations an opportunity to analyze and re-engineer their business processes and methodologies. This trend, known as *downsizing* and *rightsizing*, encourages wider access to the data traditionally bound by centralized computing resources. LAN-distributed architectures integrating a combination of 32-bit PCs, workstations, minicomputers and mainframes are evolving to create cooperative systems that meet the demands for flexibility and control in the business industry.

The first, and perhaps primary, requirement for migrating to any new system is that it must run everything the old system could, and run it on existing hardware. History has shown that systems that do not meet this simple criterion have failed to gain industry-wide acceptance—for example Windows 2.x and OS/2 1.x. Therefore, the client operating system for the 1990s must: 1) compatibly run existing DOS and Windows 3.x applications and device drivers; 2) run on most installed 386 and 486 systems and provide a migration path to systems with more powerful processors, such as Pentium and RISC.

The client of the 1990s must not only run existing software

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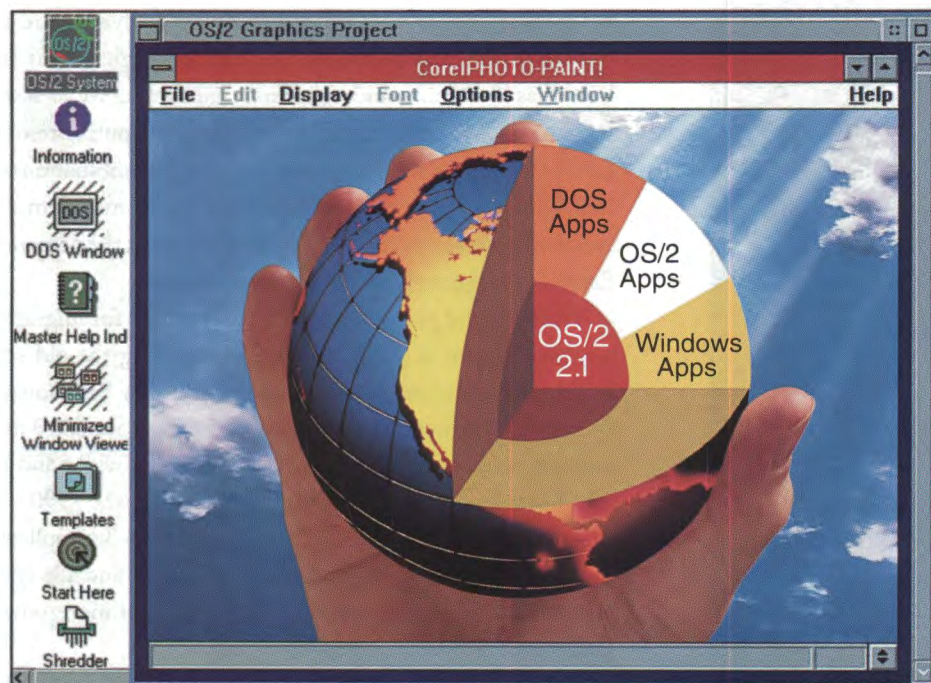
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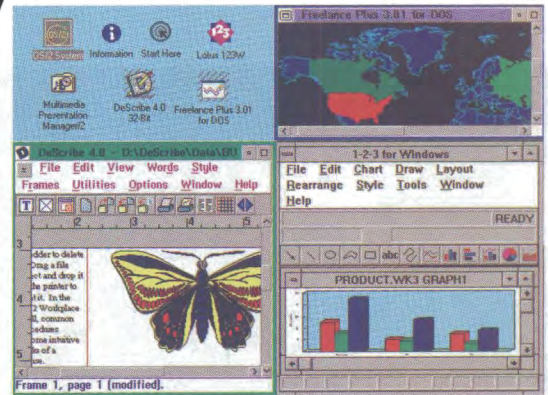
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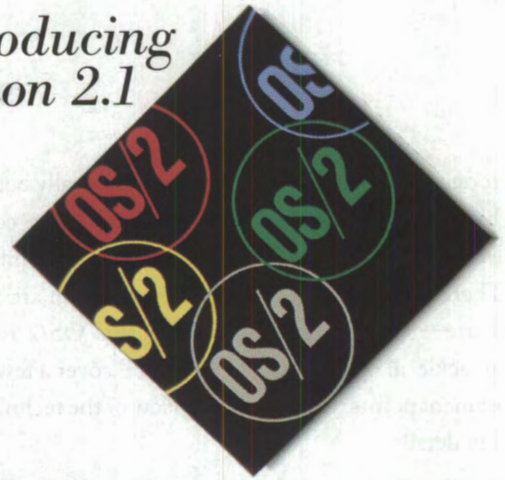
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Management (APM) support, to help extend battery life. We've made the cursor larger so it's easier to find your place on the screen. And OS/2 2.1 continues to exploit the very latest in technology. You'll find improved support for multi-media applications and pen-based capabilities, along with built-in CD-ROM and AS/400® terminal emulation support.

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SPECIAL REPORT

a product that is, in many ways, technologically better than that of his competition, a large Westinghouse-like corporation—IBM. But is it *too* much technology, and at a prohibitive price?

There's not room in this article—nor in an article five times this size—to examine all the NT-versus-OS/2 issues. Rather than tackle all of the issues in depth, I'll cover a few of the more prominent points with a brief overview of the technical and marketing details.

Why NT Is Better than OS/2 2.1

Multiprocessor support. In the very near future, symmetric multiprocessing desktop machines will be common, if in no other guise than the Pentium, which is essentially a chip containing both a 386DX (the "V" pipeline, which does not have floating-point capabilities) and a 486DX (the "U" pipeline, which has floating-point support built in). Right now, the PC world is banging its head against technological ceilings—the fastest, best equipped PC in the world can be bought from clone makers for about \$4,000. More money won't buy you more power. Beyond that, there's no room to grow without leaving the PC architecture altogether. General availability of PC compatible multiprocessor systems combined with NT's multiprocessor support could create another quantum leap of growth possibilities for the PC world.

Even though OS/2 2.1 does not support multiprocessor machines, OS/2's successor, the Workplace Operating System (WOS), will offer multiprocessor support. IBM demonstrated a prototype of the multiprocessing variant at Spring COMDEX in Atlanta.

Architecture independence. NT developers talk about NT's talent for running on multiple platforms such as Intel machines, MIPS R4000, Clipper and Alpha-based machines as if it were one of NT's primary benefits. OS/2, on the other hand, only runs on the Intel platform.

But it's reasonable to ask, "How important is this?" Would you buy a car simply because it could not only run on highways, but also on subway and railroad tracks? NT supporters say that OS/2 proponents are just talking sour grapes when this objection is raised, but I must disagree. If you add up all the sales of MIPS, Clipper and Alpha machines, they're dwarfed by the PC compatible sales of just one company such as Gateway 2000. For my money, Intel-based multiprocessor support will turn out to be much more important. Imagine a clone motherboard with 16 486 sockets on it. For another \$700, you just pop in another microprocessor, flip a switch and NT makes use of it. Again, WOS

will—whenever it's released—also support multiple platforms.

Better interrupt servicing and mid-timeslice context switches. NT is designed to handle the real-time aspects of multitasking better than OS/2 2.1. It's easier to support a device that requires brief-but-immediate attention under NT than under OS/2. For example, consider the situation of two OS/2 threads—one higher priority, one lower priority. The higher priority thread would ordinarily get all of the CPU time, but suppose that it's currently in stasis awaiting the completion of some I/O event. As a result, the operating system does not give it any CPU time. Instead, the time is allocated to the lower-priority thread. Time is parceled out in periods of time called *timeslices*. After each timeslice has been completely devoured, OS/2 re-examines the active programs to determine which one gets the next slice. At some point, the awaited I/O event arrives for the high-priority thread, which is then unblocked. OS/2 will finally be free to assign the next timeslice to the high-priority thread.

But what happens if the high-priority thread is unblocked just *after* the beginning of a timeslice? Well, under OS/2, the operating system has already allocated that timeslice to the low-priority thread. It won't switch to the higher-priority thread until the timeslice is over. NT, in contrast, switches to the higher-priority thread in mid-timeslice, essentially giving the benefits of small timeslices (smoother multitasking) without the cost of small timeslices (high overhead). A related feature, NT's design of interrupt service routines, is the best that I've ever seen in an operating system. NT's multitasking features are further enhanced through timeslice intervals as small as one millisecond. This may seem like too small an interval to accomplish much, but it should be a quite viable timeslice for a fast machine. Compare this to OS/2's minimum timeslice. A whopping 32-millisecond interval is an ancient relic left over from the OS/2 1.0 days, when the typical platform was a 10MHz 286. On a 10MHz 286, the optimum timeslice hovered somewhere around 200 milliseconds, so the 32-millisecond minimum made some sense. But it doesn't in an age of 66MHz Pentiums.

GUI input queue is not serialized. Put simply, this means that NT can give a mouse click to any window at any time. OS/2 can't hand a mouse click over to *one* program until the *previous* program has responded and passed it down the chain of command. Despite its strong multitasking underpinnings, it's still possible to clobber OS/2 with a single program that does not handle its input correctly. I saw that just recently when some program—I don't know which—grabbed the input queue on one of my machines, put the clock up and froze. Rebooting OS/2 actually

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SPECIAL REPORT

did nothing, as OS/2 just restarted the problem program, returning the clock to the screen. It took the Ctrl-Shift-F1 combination to get control back. This does *not* mean that OS/2 can't multitask—I've had searches run in the background for 20 minutes while I typed merrily away in the foreground. But it *does* mean that if the input thread for the Workplace Shell (WPS) locks up, then you're essentially out of business. As a result, a mouse click that makes the Terminal program freeze keeps OS/2 from giving a subsequent mouse click to the next application, such as the Editor. Despite "crashproofing," it is quite possible for one buggy program to stop OS/2's whole show. While you can usually break the logjam with Ctrl-Esc, this method doesn't always work. NT, in contrast, handles input separately for each window, so if a window locks up, then that's all you've got—one locked-up window, not a locked-up system.

Ironically, OS/2 has that single input queue because Microsoft asked IBM to implement it that way. But it turns out maintaining a single input queue made Windows support easier to implement—or so it's said.

NT will have better driver support. Some will argue that this is just speculation, but I don't think so. The March NT beta already has support for bezillions of video boards, LAN boards, SCSI boards, you name it. As a Microsoft representative said at the NT developer's conference, "we learned our lesson—we're not shipping anything without plenty of drivers." I just wish IBM would learn the lesson. I still don't have OS/2 drivers for my no-name S3 local bus video system, so I'm running a high-performance system in a crippled VGA mode. When I run NT on the very same system, in contrast, the shipped-in-the-box S3 driver works like a charm. I have no idea where I'll find an OS/2 driver for my Intel EtherExpress 32 EISA boards. NT detected them on installation and loaded a driver that has delivered no problems.

NT is C2-secure. C2 security makes sense in a server environment. Furthermore, Uncle Sam wants it, and he's a big customer. One thing that C2 seems to imply is that I won't be able to unerase files, which worries me a bit. OS/2 isn't even close to C2, although running HPFS386 on a server makes it a bit more difficult to get to files without access rights. Nevertheless, neither system is as secure as you might be led to believe. I've rebooted NT systems with a DOS floppy, fired up Norton DiskEdit and seem to have no problems at all poking through files. It's always seemed that "microcomputer security" is one of those oxymoronic terms like "jumbo shrimp" that seem to permeate the industry.

Odds 'n' ends. NT addresses eight times as much memory as OS/2—4096MB versus 512MB. Both may seem like stratos-

pheric numbers now, but wait a few years and they'll start to look confining. NT supports TrueType, and that's important—at least to me. I've managed to assemble a fairly nice array of high-quality TrueType fonts for much less than the equivalent-quality PostScript fonts would have cost. It's annoying to buy the same fonts in PostScript just so I can write with an OS/2 word processor. NT's New Technology File System (NTFS) is much like OS/2's HPFS, with the added benefit that it solves HPFS' backup problem. Both file systems support long file names, but HPFS can't back up files with long names to floppies or other FAT-based volumes. NTFS can. The largest file possible on NTFS is said to be 16GB; it's 2GB under HPFS. Again, seemingly unimportant until you start handling large image databases. NT includes OLE, but OLE in its current state isn't of much value. Now, when *Cairo* finally appears—well, that'll be interesting.

Built-in Networking. Every NT workstation is basically a nondedicated LAN Manager server, able to offer its resources to other devices on the network, or to use the services of other computers on the LAN.

While this is nice, most corporate users already have a network with which they're quite happy. It seems a mite presumptuous to suggest that people don't mind dumping their Banyan or Novell systems, but then this is from a company whose DOS 6.0 installation program suggests that "perhaps you could save space by allowing this program to remove OS/2 from your disk."

Why OS/2 2.1 Is Better than NT

OS/2 is practical and cheaper on current hardware. It's silly to try to run NT on a 33MHz 386DX with 10MB of RAM; it's quite feasible with OS/2. I wrote *Inside OS/2 2.0* on a 20MHz, 10MB 386SX laptop and found it responsive enough. There's not a prayer of running NT on that machine. Today's affordable top-of-the-line PCs run OS/2 like a dream. In contrast, such configurations are clearly the entry- to mid- level systems for NT. I suspect that most big-time NT programmers will be developing their applications on a non-Intel system if for no other reason than performance constraints. Now, on a MIPS, NT really *runs*, but those MIPS workstations cost over \$15,000 with all the trimmings.

It is reminiscent of Apple's years with the Macintosh. The original Mac was underpowered—Apple encouraged developers to buy a larger, much more expensive system called the Lisa for serious projects. Many potential clients balked at the premium prices. It wasn't until the Mac became a more powerful system that the Macintosh came into its own. Of course, Apple had no serious competition on the GUI front at the time, so the delays in mar-

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keting an affordable Mac-based development system were not fatal.

When people ask me to contrast NT and OS/2, I'm often tempted to say, "NT is powerful, but OS/2 is practical." That's practical *now*, mind you. As I mentioned earlier, cheap and blindingly fast multiprocessor machines are just around the corner, and the 486DX3 is slated to appear by the end of 1993. At 99MHz, we may not care about any speed differences between OS/2 and NT.

OS/2's System Object Model (SOM) is more advanced than Win32. Ask a bunch of NT programmers what they think is great about NT, and they'll tell you that it's a better programming environment than Windows/DOS. Ask OS/2 programmers what's great about programming with OS/2, and they'll tell you SOM. SOM lets you program object-oriented applications without adopting an object-oriented language, or at least that's the *idea*. In theory, SOM offers object orientation not only to the obvious third-generation language (C)—it will let you write object-oriented programs with FORTRAN, Pascal, COBOL, BASIC—you name it. A friend of mine built an OS/2 program that's apparently the "secret weapon" used by a major Wall Street investment firm in the bond world (I'm not being coy, I'm just not supposed to name names). He claims he was really only able to build this key system with the power of SOM. He has a lot of programming experience under his belt, so he should know.

Object orientation on regular languages? Well, take some of that with a grain of salt. Try to find the tools to implement FORTRAN SOM and you'll be told that it's coming "real soon now," and that currently only C (surprise!) is supported. But it's a step in the right direction. Soon OS/2 will take things a step further, and will offer the ability to share objects over a network with DSOM (Distributed System Object Model). SOM is a big plus for OS/2 that's not challenged even by any vague pre-announcement FUD from Microsoft. There's nothing like it in the Microsoft plan.

The Workplace Shell (WPS) is far superior to the NT GUI. The more I use WPS, the sillier the Windows GUI seems. I'm starting to have trouble calling Windows a GUI—it seems more like a graphical shell. The whole idea of going to a separate File Manager to manipulate drives smells too command-lineish for my taste. Then, for a good time, try to figure out printer support. Want to load a font into a printer using Windows or Windows NT? Well, there's a picture of the printer on something called the Print Manager, so perhaps that's the place to go—nope. To load a *printer* font, open up the Control Panel, then avoid the obvious Fonts applet. Instead, go to Printers and single-click the printer

in question. Next click **Setup**, then **Fonts** and finally load the fonts. Intuitive, eh? In contrast, the WPS has one item called the *Printer object*. You control printing and the printer from this object. It's simple and about as logical as GUIs get.

I'm amazed how many WPS users have never taken the time to figure out two very useful WPS features—shadows and Work Areas. Shadows are similar to "aliases" in the Macintosh world. They seem to be objects, but they're not. They're essentially shortcuts to objects that may lie buried several folders down. Work Areas are similar to any standard folder used for storing objects. The difference becomes apparent when you open the Work Area—when you do, you also open the objects in the Work Area. [See May TNT for tips on using Work Areas.] Set up all the items needed for a particular project in a Work Area, and then you can restart work on a project just by opening up that project's Work Area.

Eventually, Windows will have a WPS-like front end in Cairo. But it's years away.

OS/2 is a "1.1" product available today. Good as NT is, it's still its first incarnation, and it has the usual "1.0" problems. If history serves as any kind of model, then it's reasonable to presume that we won't see a "1.1" version of NT for a year to 18 months. That means that developers will wait until late 1994 or early 1995 for a "production" version of NT. That may not be a fatal flaw, as the operating system decisions made today will probably live on for decades. From the perspective of the year 2020, no one may care whether OS/2 was mature in 1993 and NT took until 1995—it'll all seem like ancient history. But someone needing a real 32-bit operating system *now* will end up gravitating to OS/2 2.1.

All of the 1.0/1.1 arguments that I just made about OS/2 and NT will be repeated when WOS appears. WOS will likely show up in a 1.0 version about the same time that NT rolls out its 1.1 version. And, just as there are zealots proclaiming that NT's 1.0 is "as good as a 1.1," there will be WOS bigots as well—bet on it. But the NT zealots and the WOS bigots will be wrong. While Dave Cutler's Microsoft NT team is a high-quality bunch of programmers turning out a terrific product, there's nothing like "going GA" (General Availability) to find out where the bugs really live.

OS/2 2.1's support of DOS and Windows is better than NT's. Despite the charges and countercharges about which OS runs DOS or Windows/DOS more quickly, there's an undeniable advantage in OS/2's ability to virtualize DOS device drivers. If you have a device that requires a DOS-based program and device drivers, then you probably can't run it under NT. You'll

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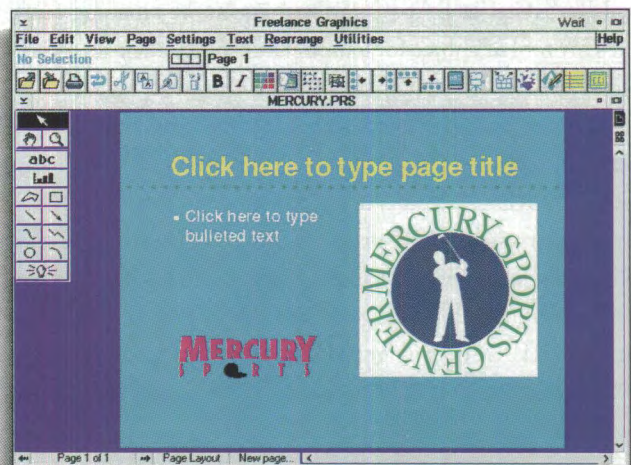


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Minasi, continued from page 26

need to find NT drivers and a new NT application for your device. You will *never* be able to run these kinds of DOS programs under NT—that includes data acquisition, fax software and some back-up devices. In contrast, with OS/2 you can always create a DOS virtual machine and load a DOS device driver.

OS/2 includes REXX, a powerful batch language. Windows/DOS and Windows/NT are terrific in many ways, but there's still no way to tell them to start a couple of copies of the Notepad and place them into particular locations on the screen. To accomplish that kind of task, some people would reach for Visual BASIC. Viz BASIC can manage some amazing feats, and it's my tool of choice for banging out some quick-and-dirty Windows program, but it's a separate \$200 product (at least *Professional VB* is, and in my experience it's the only version worth having). In contrast, OS/2 includes a very powerful batch language called REXX. You can build large systems with REXX. They support structured programming tools, come with a WPS-based debugger and can even be used to manipulate and control the Workplace Shell—if you pierce the lack of documentation. REXX doesn't get a lot of press, but it fills the same OS/2 gap that Viz BASIC fills for Windows—and it's shipped free with OS/2.

A lot of people worry about what's better, NT or OS/2. From my point of view, it almost seems like a moot point. At the moment, it seems that OS/2 is the sturdier of the two and the cheaper. It even sports some advantages that NT seems totally unwilling to challenge, such as REXX and SOM. In contrast, NT offers the promise of a more industrial-strength multitasking engine and greater market acceptance.

No matter what a person's biases, I think most folks would agree that the world has gotten quite a bit better if we have the luxury of fighting over *which* 32-bit protected mode graphical operating system to use—it wasn't that long ago that major industry players were fighting over how kludges like expanded memory should look!

Consider it an embarrassment of riches. And remember—even though Edison and Sony lost, Edison still made it into the history books, and you watch Beta every night on the evening news. ♦

Mark Minasi has worked with OS/2 since the 1987 betas. He coauthored Using OS/2 1.1 and later authored Publishing's Inside OS/2 2.0, the best-selling OS/2 2.0 book in 1992. He has recently updated that book to cover OS/2 2.1. His firm, Mark Minasi and Company, is in Arlington, Virginia.

Kogan, continued from page 19

compatibly, but must also provide the infrastructure to support downsized mission-critical programs—in other words, an Application Programming Interface (API) that is portable, scalable and platform independent, and includes services for multitasking, protection, virtual memory, interprocess communication and networking.

The server of the 1990s must have all the features of a client and more. It must interoperate with virtually anything, including PCs, workstations, minis and mainframes. It should have facilities to share devices such as files, printers, scanners and faxes, and support standard and *de facto* standard architectures such as Novell, LAN Server, LAN Manager, Banyan-Vines, Appletalk, TCP/IP, SNA and OSI. It should also support the evolving standards for distributed architectures such as the Open Software Foundation's (OSF) Distributed Computing Environment and Distributed Management Environment.

System Overview

It is time for users to graduate from DOS/Windows 3.x to something else which meets these requirements. At first glance OS/2 2.1 and Windows NT 3.1 seem similarly equipped to manage a fluid transition. On the surface, both feature a robust multitasking environment that runs DOS, Windows 3.x and native 32-bit applications. However their internal architectures and implementation are very different due to their different design goals and philosophies.

OS/2 1.x was originally supposed to replace DOS, overcoming its limitations with respect to multitasking, memory management and a Graphical User Interface (GUI). While OS/2 1.x provided a powerful programming model with the right features, it was crippled by two interdependent factors: it was targeted for 80286 processors and had poor DOS compatibility. OS/2 2.0 was the first 386-specific version of OS/2, and 2.1 is the latest version with significant enhancements [May Special Report]. IBM's primary goals in the 2.x system were to:

- Leverage the 386/486 hardware and software installed bases
- Use the 386 architecture to dramatically improve backward compatibility
- Provide a reliable multitasking environment that is seamlessly integrated
- Provide a cross-platform mission-critical programming environment
- Exploit object-oriented GUI technology

The result is a traditional layered system whose implementation

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is x86-specific and exploitative. Device drivers support machine-specific details for a wide range of existing 386 and 486 systems [Figure 1]. A single kernel contains all supervisory functions, while oth-

ers are packaged in libraries that are attached to applications.

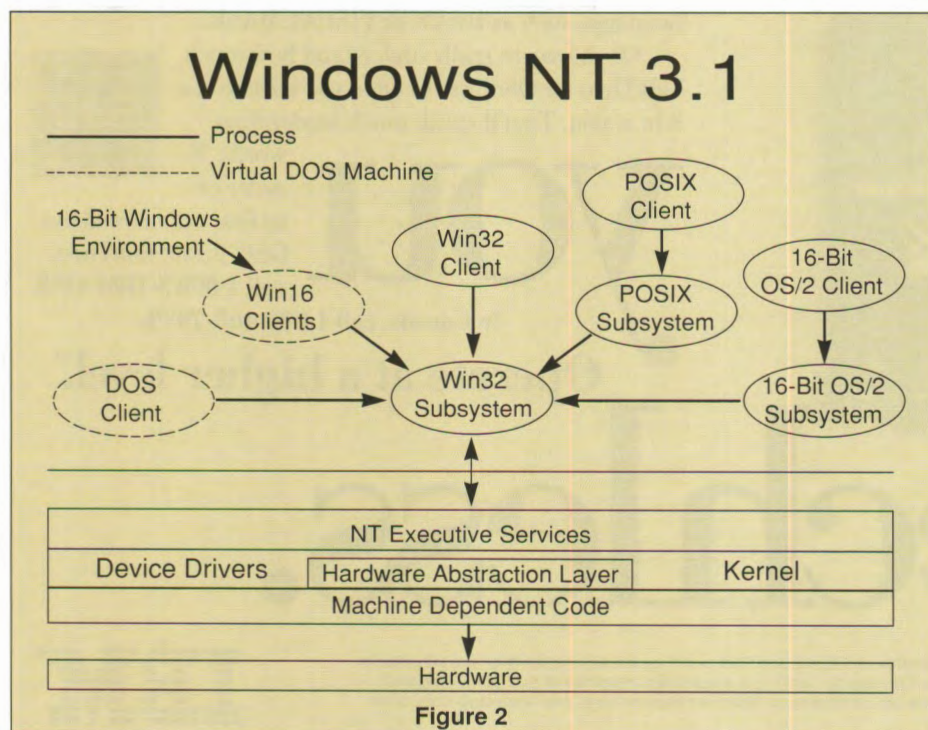
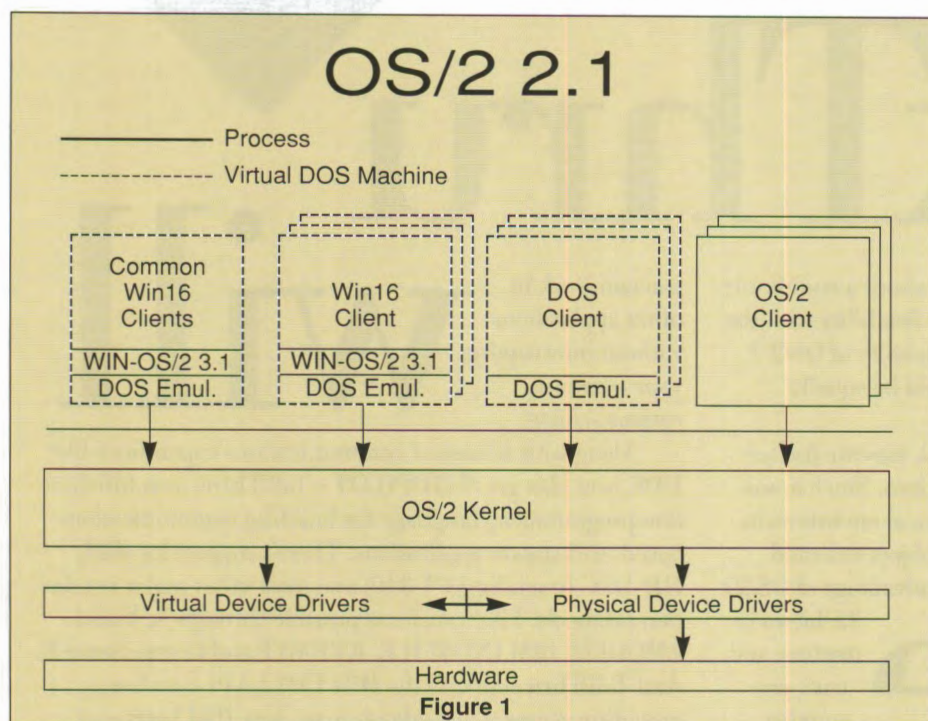
The design and goals of NT are farther reaching than those of the current OS/2 2.x codebase. NT was originally

planned as the successor to Windows 3.x, designed to overcome its limitations and extend the Windows product line with an offering suitable for mission-critical applications and servers. The major goals of the NT architecture are to:

- Provide a cross-platform system that can run on RISC and x86 systems
- Support single processor and symmetric multiprocessor architectures
- Provide reliable multitasking in a secure environment
- Provide a cross-platform mission-critical programming environment
- Run DOS, Windows 3.x, 16-bit OS/2 and POSIX applications compatibly
- Integrate networking capabilities into the base product

Microsoft met these goals through a *microkernel* architecture derived from Carnegie-Mellon University's Mach system model [Figure 2]. NT's message-passing, client/server architecture maximizes processor independence, device independence, architectural independence and parallelism.

Microkernel implementations place the system personality logic in a server process known as a *subsystem* which acts as a bridge between the operating system API and functions of the microkernel. Although NT does not use Mach, it embraces many of the same concepts. The NT executive plays the role of the microkernel, containing the low-level logic for multitasking, memory management, message passing, I/O and synchronization. Subsystems provide the operating system personalities required for the hosted application set such as the Win32 subsystem for 32-bit Windows programs and the POSIX subsystem for the POSIX API and programs.



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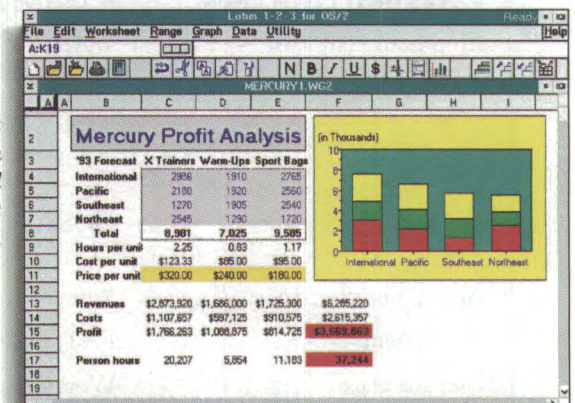
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Hardware Requirements

If a new system's hardware requirements mandate significant upgrades to installed hardware, the actual cost of migration can be prohibitive. The minimum recommended hardware configurations [see Table 1] are not particularly well suited for either operating system. Most users will require at least an additional 4MB RAM and an additional 50-100MB disk space to obtain adequate functionality. Although NT has higher hardware requirements, its portability and scalability allow it to run on higher performance platforms such as RISC-based systems and tightly-coupled symmetric multiprocessors.

Microkernel architecture gives NT portability and scalability at the expense of one or more additional horizontal layers in the system model. The additional

complexity, logic and path length in the system implementation can lead to potential performance degradations. OS/2 forgoes portability and scalability to stay as fast and small as possible, resulting in reduced hardware requirements. Run OS/2 and NT side by side on equal single processor systems and it becomes evident that OS/2 runs circles around NT.

DOS Compatibility

Both OS/2 2.1 and Windows NT 3.1 provide DOS compatibility in a model equivalent to multiple PCs, each running their own DOS applications. However, these "multiple" PCs are integrated seamlessly into a single system. Table 2, on page 34, summarizes the systems' DOS compatibility. Both systems:

- Use the virtual 8086 mode of operation to run DOS applications on Intel x86 processors and NT emulates x86

instructions on RISC based systems

- Provide reliable system integrity by encapsulating DOS applications in protected virtual machines with their own unique resources
- Emulate the personality of DOS by intercepting application calls to DOS and performing the requested operations using native system code
- Preemptively multitask DOS applications running in virtual machines, so DOS applications can be run in the background
- Run DOS applications within a window and transfer data between other applications via the clipboard

Due to their distinct design philosophies, the DOS compatibility implementations of OS/2 and NT have some significant differences. Because NT gives security a higher priority than compatibility and performance, DOS device drivers are not

• **TABLE 1** •

• System Overview

Minimum Hardware Requirements

Processor Platforms

Multiprocessing Compatibility

Application Portability

File Systems

User Interface

Security

Client Networking

Server Features

• OS/2 2.1

16MHz 386, 4MB RAM, 30MB DASD

386, 486, Pentium Processor

No
DOS, Windows 3.x, 16-Bit OS/2

Yes

FAT, HPFS

Workplace Shell

LAN Server

NTS/2, LAN Requester

DOS, Windows, OS/2, Netware, Banyan-Vines, TCP/IP, NFS, X/Windows, OSF DCE/DME, SNA, OSI

• Windows NT 3.1

33MHz 386 or 25MHz 486, 12MB RAM, 70MB DASD

386, 486, Pentium Processor, DEC Alpha, MIPS

Yes
DOS, Windows 3.x, 16-Bit OS/2*, POSIX**

Yes

FAT, HPFS, NTFS

Program, File, Print Managers

Integrated

Integrated

DOS, Windows, OS/2, Netware, Banyan-Vines, TCP/IP, NFS, X/Windows, OSF DCE/DME, SNA, OSI

* OS/2 compatibility limited to 16-bit character mode applications.

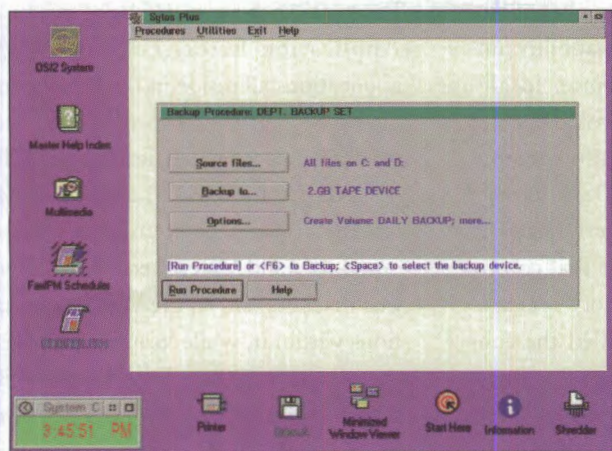
** POSIX compatibility limited to character mode applications.



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Sytron backup and recovery

of Sytron Plus stands alone, its benefits can extend across OS/2 networking environments, including IBM LAN Server.

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Rebound does it unattended and rapidly—in less than 10 minutes.

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SPECIAL REPORT

supported, and ill-behaved applications may have problems. On the other hand, OS/2 2.1 does not have built-in security and emphasizes maximum compatibility and reliability. Which is better? It depends on the user's needs. Ideally, a user could dynamically configure the system for the desired levels of compatibility and security, instead of following fixed policies set by the vendors.

When DOS is emulated in a virtual machine the actual internals of DOS are not present and many applications that depend on internal data structures, block device drivers and version-specific features cannot run. While emulating DOS has its own advantages, absolute DOS compatibility can only be ensured by running an actual copy of DOS in a virtual machine. Only OS/2 gives users the ability to boot any version of DOS or DR-DOS into a virtual machine.

Windows 3.x Compatibility

Although both OS/2 2.1 and Windows NT 3.1 provide compatibility for Windows 3.x software, they implement it in dramatically different fashion [Table 3, page 35]. The first method, used by NT, is called a binary compatibility layer, or in the Microsoft lingo *Windows-On Windows (WOW)*. In this approach Windows

3.x standard mode applications run in a virtual DOS machine, which emulates Win16 by mapping their requests into Win32 subsystem services. Because NT does not use real Windows 3.1 GDI, USER and KERNEL components in the virtual machine, it does not support Windows device drivers, such as existing video and printer drivers. Furthermore, Windows applications that utilize internal data structures, such as The Heap, are incompatible with NT. Windows 3.x virtual device drivers (VxDs) and some enhanced mode applications are not supported either.

Early prototypes of OS/2 2.x used a similar emulation technique, but it was abandoned because of compatibility limitations and poor performance. Ideally, native Windows 3.x code would run in a virtual DOS machine. Unfortunately, this would conflict with OS/2 because native Windows 3.x directly accesses processor-specific resources that control mode-switching and memory management. Instead, IBM modified the conflicting portions of Windows 3.x source code to use the DOS Protect Mode Interface (DPMI). Because the resulting Win-OS/2 environment is identical to that of Windows in its native DOS-extender role, Windows device drivers are

supported, all of the internal structures of native Windows 3.x are intact and compatibility and performance are optimal.

Both OS/2 and NT permit multiple Win16 applications to run within a single common virtual machine. Within the virtual machine the applications are cooperatively multitasked, as they are in native Windows 3.x. Thus, within the virtual machine, any Win16 application can hang another by failing to read its message queue (in effect to "uncooperatively multitask").

Additionally, a single virtual machine approach can lead to data loss from memory access violations—called General Protection Faults (GPFs) or User Application Errors (UAEs). Win16 applications all reside in the same memory space and thus can overwrite each other's data at any time, leading to a GPF or UAE. Under DOS, a hung application or GPF requires a system reboot. However, OS/2 and NT can terminate the virtual machine and all the Win16 applications within it, while keeping the rest of the system running. Unfortunately like native Windows 3.x, any data not saved by the Win16 applications within the virtual machine are lost.

OS/2 provides additional Win16 options not available to NT users: preemptive multitasking with background operation and interapplication protection through multiple virtual DOS/Windows 3.x machines. However, more processor and RAM resources are required to split Win16 applications across virtual machines, so its usage is recommended on an as-needed basis, rather than as the default.

32-Bit Application Programming Interfaces

Both systems have a new cross-platform, 32-bit programming model based on a portable 32-bit API. This means an

• TABLE 2 •

• DOS Compatibility	• OS/2 2.1	• Windows NT 3.1
Compatibility	DOS Emulation or DOS in VDM	DOS Emulation
Device Drivers	Yes	No
Multitasking	Preemptive/Timeslicing	Preemptive/Timeslicing
Priority	Dynamic	Dynamic
Protection	Yes	Yes
Configurability	DOS Settings	PIF

SPECIAL REPORT

application written to the API is insulated from the underlying hardware architecture and can be ported across architectures with a mere recompilation. The native OS/2 32-bit API is an enhanced, portable, 32-bit version of the original 16-bit OS/2 1.x API. Native applications for NT utilize the Win32 API, an enhanced, portable, 32-bit version of the 16-bit Windows 3.x standard mode API.

As you see in Table 4, the functionality of the APIs is very similar. This should not be surprising since the 32-bit OS/2 API was originally designed to work on both the OS/2 codebase and on NT. Since it is more recent, the Win32 API has a few more features built into the system, such as memory-mapped files, security and networking.

Both APIs support true preemptive multitasking, multiple threads per process and provide the appropriate synchronization and data-sharing capabilities required to build concurrent applications. A multithreaded process model is important for creating applications whose performance can scale with the number of processor elements in the system and for keeping the system responsive. Both support large separate-process, virtual-address spaces, protecting processes from each other and preventing them from compromising the system.

In addition to native Win32 applications, NT also supports applications coded to the Win32s and Win32c subsets of the Win32 API. Win32s contains the same functional content of the 16-bit Windows 3.1 standard mode API, thus allowing a Win32s application to run on both enhanced-mode Windows 3.1 and NT. However, because Win32s is limited to the functions inherently available on Windows 3.1 standard mode, such applications cannot take advantage of mission-

• Windows 3.x Compatibility

Compatibility
Device Drivers
Virtual Device Drivers (VxDs)
Multitasking
Background Execution
System Protection
Application Protection

• TABLE 3 •

• OS/2 2.1

Win-OS2 3.1 in VDM
Yes
No
Cooperative or Preemptive
Yes
Yes
Yes

• Windows NT 3.1

Win16 Emulation
No
No
Cooperative
No
Yes
No

• 32-Bit Applications

Portable API
Multitasking
Multiple Threads
Memory Management
Protection
Semaphores
Pipes
(Named/Anonymous)
Exceptions
Memory-Mapped Files
Windows
Graphics
Objects
Security
Networking

• TABLE 4 •

• OS/2 2.1

OS/2 32-Bit
Preemptive
Yes
Flat Model,
512MB/Process
Yes
Yes
Yes
Yes
No
Yes
Yes
Yes
Add on
Add on

• Windows NT 3.1

Win32s, Win32c,
Win32x, Win32
Preemptive
Yes
Flat Model,
2GB/Process
Yes
Yes
Yes
Yes
Yes
Yes
Yes
Yes
Yes

critical API functions such as multitasking, multiple threads and interprocess communications when run on NT.

The Win32c subset is specific to the future Chicago/Windows 4.0 product. It will add features beyond those offered by

Win32s: multitasking, multiple threads and interprocess communications. To ensure compatibility with the millions of existing Windows 3.1 systems, most software developers targeting Windows will first create Win32s applications, or

SPECIAL REPORT

potentially Win32c when it becomes available. The complexity and added cost of maintaining, testing and supporting Win32s, Win32c and Win32 versions of a single application is a significant issue for software developers.

Networking

Windows NT 3.1 comes with peer networking support, enabling users to share files and devices, and communicate via e-mail. While these services are not bundled with OS/2, they are available as options in the NTS/2 and LAN Requester products. Both systems support access to resources on all of the popular network systems, including Novell Netware, LAN Server, LAN Manager, Banyan-Vines, X/Windows and NFS, and can interoperate across NETBIOS, IPX/SPX, TCP/IP, SNA and OSI protocols.

Although NT has been positioned as a server operating system, its base packaging is actually that of a mission-critical client. Windows NT Advanced Server is the server incarnation of NT. It supports symmetric-multiprocessing application servers, a domain network model, Apple clients, integrated backup, disk duplexing and mirroring and RAID support. OS/2 LAN Server 3.0, the server version of OS/2, also supports a domain network model, Apple clients and security. Other features such as disk duplexing and mirroring, RAID support and backup are available as separate products for OS/2. Extensions that support the OSF's Distributed Computing Environment and Distributed Management Environment are available for both platforms, as well as a variety of network management products.

System of the 1990s?

Which system will become the system of the 1990s? OS/2 2.1 is more of an incre-

mental step for DOS/Windows 3.1 users than NT. The high hardware requirements and limited compatibility and performance of NT compared to OS/2 should inhibit its acceptance on the current installed base of PC systems. Because NT does not match the requirements for a client of the 1990s and is immature in its first release, look for it to be used primarily as a RISC workstation operating system and as a server platform in the next two years. Microsoft appears to be positioning Chicago/Windows 4.0 as a better fit for a client system. However it had not yet entered beta test at the time this article was written.

OS/2 2.x already enjoys more than 2,500,000 users worldwide, 1,100 applications and has established itself as a viable option for downsizing corporations. IBM clearly has the package that Microsoft really needs for a client plat-

form in OS/2, but Microsoft already has the high-end portable system IBM needs in NT. IBM has demonstrated multiprocessor support for OS/2 2.1 and a Mach-based portable version of OS/2 (that also runs AIX applications) called the Workplace OS. IBM has the right system for the next two years with OS/2 2.x (because the market is still predominantly x86) and a plan to evolve the system towards Workplace OS over the next decade. Everything else is marketing. ♦

Michael Kogan, ScD, an independent consultant who specializes in personal computer software and systems, has 12 years of experience in the computer field and provides corporations with technical consulting and education services on an international scope. He is also coauthor of "The Design Of OS/2," which describes the architecture, design and internals of both 16-bit and 32-bit OS/2.

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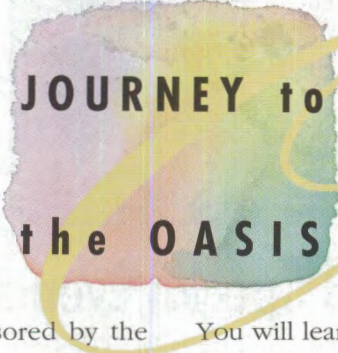


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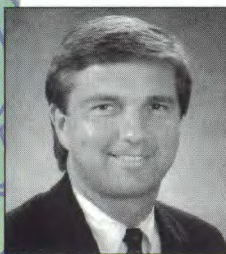
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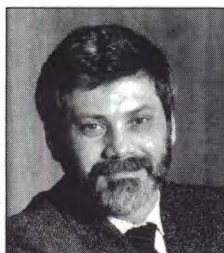


Keynote Speakers



JOHN A. SOYRING. As IBM's director of software development programs, Soyring provides guidance and leadership to hundreds of developers and companies around the world involved with OS/2-related products. Few are as knowledgeable as he is about not only the technical aspects of OS/2, but future planning.

EDWIN BLACK. Mr. Black, editor and publisher of *OS/2 Professional*, has distinguished himself as an investigative reporter, editor and book writer. He is the author of the best-selling *Transfer Agreement* (Macmillan) which won the Carl Sandburg Award for the best nonfiction book of 1984. As publisher of *OS/2 Professional*, Mr. Black was nominated by the editors of *Inc. Magazine* as "Entrepreneur of the Year."



WILLIAM ZACHMANN. Mr. Zachmann, an *OS/2 Professional* columnist, is a world-renowned expert on information technology. His analysis of the present period as one of transition into the sec-

ond era of information systems has been influential in the industry. A former senior vice president of International Data Corporation, Zachmann has been a well-known columnist for *PC Magazine*, *PC World*, *Computerworld*, *InfoWorld*, and *PC Week*.



JOHN C. DVORAK. Mr. Dvorak is an illustrious computer columnist, book writer, and virtual icon in the industry. His columns appear in the *San Francisco Examiner*, *PC Magazine*, *MacUser*, *PC Computing*, *Microtimes*, and many more.



LOIS A. DIMPFL. Ms. Dimpfel, PSP director of personal operating systems, is one of OS/2's most energetic and engaging



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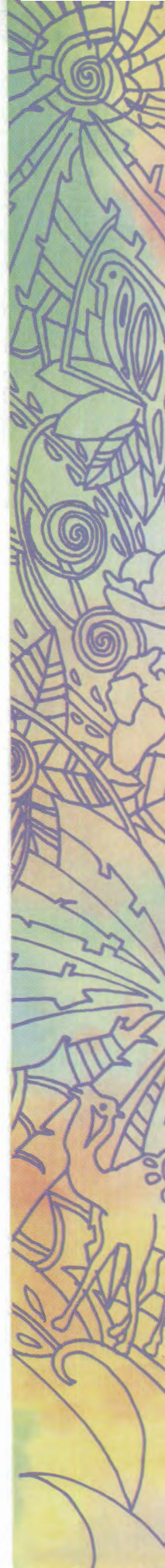
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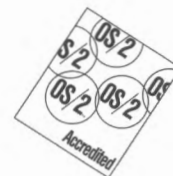
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Please note: All events and speakers listed in this offering are current as of press time and are subject to change as we strive to keep you on top of the rapidly-evolving world of OS/2.

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US/TOO

Gossip and Chip Talk



MICROGRAFX STILL COOKING. Amidst rumors that the fantastic Fall COMDEX Micrografx Chili Cook-off would be canceled due to the company's financial situation, we learn that The Chili Cook-off will in fact be held again this fall. "But it will certainly be different," confides Micrografx CEO **J. Paul Grayson**. Grayson will be able to release details shortly. He's still trying to finalize arrangements with cook-off partners.

UNUSUAL RECOGNITION. The hot new stars to watch at IBM are those attached to the Continuous Speech and Voice Recognition projects. For the past three years, 16 developers and a dozen marketing types have been isolated for a single mission: producing the next generation of powerful continuous speech applications that can decipher a vocabulary of words spoken continuously regardless of inflection or accent. It's all been organized under the leadership of IBMer **Elton Sherwin**.

LINDY CROSSES OVER. **Keith Lindenberg**, one of OS/2's veteran media relations guys, has left IBM to join the PR firm of **Brodeur and Partners** as their point man on OS/2. Brodeur just picked up the IBM account following the parting of the ways with **Jennings & Company**. Why did Lindenberg switch? He was unable to relocate to Austin with the rest of the PSP group. He was offered another job at Big Blue, but Lindenberg preferred to stay with OS/2. "When the opportunity came to work with Brodeur on the LAN and OS/2 account," says Lindenberg, "I jumped at it. I have been part of OS/2 for almost three years and I want to see this launch through to success in the market." Lindenberg is one of OS/2's most knowledgeable PR sources.



LENO A CLASS ACT. The classiest act at PC EXPO was *Tonight Show* host **Jay Leno**.

Only hours after his mother's funeral, the ever-professional Jay Leno brought down the house—or should we say the ship—at WordPerfect's party aboard the USS Intrepid. During his standup routine, he poked gentle fun at his parents, speaking frequently of his mother. In the world of comedians, that's the fondest salute. Obviously a high point in a week that he described elsewhere as "the worst in my life," Leno's dramatic appearance at the WordPerfect 6.0 for DOS announcement was

a delight for the attendees, and a demonstration by Leno that he is now the King of Comedy.

SCHMOOOOZE. The coolest party at PC EXPO in New York had to be The 4th Annual Schmooze Party.



Held at The View, a revolving sky-high restaurant in the Marriott Marquis, the Schmooze Party has become a tradition in New York. This year's fete

boasted appearances by Compaq Chairman, **Ben Rosen**; Borland CEO, **Philippe Kahn**; TV producers from *20/20*; ABC News; PBS; and rock star **The Great Kat**. Over 300 guests, from press, vendors, venture capitalists, to investment bankers, partook of the breathtaking Manhattan skyline. Amid the din of glass clicks and popping champagne corks, BBC radio's **Jan Ziff** taped a long interview with **Edwin Black**, publisher of *OS/2 Professional* magazine, for worldwide broadcast later this month.

NOT SO CLASSY. Ironically, Edwin Black and his entire staff got kicked out of *PC Week's* **Spencer Katt** party, once thought to be the classiest gig at PC EXPO. After Black's entrance to the party at New York's Le Bar Bat, an alert *PC Weeker* immediately recognized Black and quickly asked him and his staff to leave, declaring, "You are considered competition." Black quipped, "Little us? How can our nine-man company be competition to the mighty Ziff-Davis?" But with *OS/2 Professional* edging toward the 200,000 circulation mark and fast growing, it will soon surpass *PC Week* itself, which is hovering at approximately 250,000. The ouster is seen by many as an admission that *OS/2 Professional* has indeed "arrived." It is hardly alone in the ouster, however. It seems that the Ziff-Davis publication does not want any competing magazines at its parties. Even an editor from sister Ziff publication *PC Magazine* was thrown out!



GERSTNER AND THE INTERCHANGE. Among those who will be passing on conference greetings to those attending The OS/2 Professional Interchange will be IBM CEO **Louis Gerstner**. The Interchange will host some 2,000 top OS/2 and LAN consultants and MIS managers at Palm Springs, California, October 17-20. Gerstner is using the official greeting as one way of demonstrating IBM's commitment to OS/2.

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by Jim Cannavino, IBM Sr. VP and General Manager of Personal Systems; interactive elective sessions on the latest in OS/2®, LAN Systems, 32-bit graphics, object-oriented programming, multimedia, pen, database and communications; OS/2 and LAN labs; and an exhibit area with demos of vendor software that exploits PSP products. There will be special bonuses, product raffles and an active schedule that even includes a "special event."

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Circle #105

Q & A

A straight-talk interview on topics of professional concern

WordPerfect

WITH ALAN ASHTON

WordPerfect Corporation is known for its dominance in the word processing field. But it is also known for its founder, Alan Ashton, a man of traditional family values. Those values have inspired the entire WordPerfect family of some 5,500 employees and agents in more than 22 countries who serve an installed cross-product base of 13 million users. Now WordPerfect is going to make its mark in the OS/2 world with a group of products, commencing with WordPerfect for OS/2. Alan Ashton, his product line, his company and his commitment to OS/2 were probed in an interview with publisher Edwin Black and editor Bradley Kliever at the recent PC EXPO in New York. An edited transcript follows.

EB: Alan Ashton, you're leading one of the largest, most important software companies in the world. Let's talk about what's really important. How many children do you have?

AA: We have 11 children. We also have a foster daughter who came to us when she was 14 years old. She's now married with a couple of children. Altogether, we have six grandchildren now.

EB: Family is pretty important to you?

AA: Family is extremely important to us. Every Monday we bring our entire family together. We just have a good time. Then, there are so many birthdays throughout the year that we just pick one Monday and celebrate all of the birthdays together.

EB: Isn't it difficult to observe every Monday when you travel so much?

AA: Sometimes. I've tried to be a little bit protective of the first part of the week because of family and church obligations. That leaves the rest of the week for travel.

EB: I get the feeling that your personal sense of family characterizes the WordPerfect family. Tell us about the WordPerfect family.



Q & A

AA: The WordPerfect family is indeed just a great group of people whom I dearly love and respect so much. I know that I've received so many good comments from people who call our support line. They mention how easy it is to talk with our people, the extra effort that they go through. And I have a great deal of gratitude toward the people who work at WordPerfect for the extra amount of work that they do. When they work hard it's not a matter of our saying "you need to work harder in order to keep your jobs." Rather, it's all of us deciding that our products are important for our customers. So opportunities to get these products out into our customers hands bring great satisfaction to us.

EB: How does that translate into OS/2? It seems you have quite an energetic team within that family committed to OS/2.

AA: There is a great group committed to OS/2. We have a wonderful relationship with the people at IBM at all levels--executive as well as development levels. We believe in OS/2 and have pledged our support for a number of years.

EB: You use it internally?

AA: Oh, yes. Our developers using OS/2 tell me how much easier it is to work in that environment because of the multithreading. By running multiple tasks and server-type applications, and editing in sessions while the various linking and moding sessions are going, we really save a lot time using OS/2.

BK: Are they using OS/2 to develop more than just OS/2 applications?

AA: Yes, well beyond just OS/2 applications. For DOS and for Windows. When we started some of our projects, we got OS/2 up and running from the very beginning. It saved us money. Quite simply, we didn't have to buy as many machines. Otherwise we would have had to have some machines for editing and other machines for loading and transferring files back and forth. So it was very advantageous to us to have OS/2's multitasking capabilities.

EB: So what would you say to a large corporation that is trying to examine its own hardware and software needs vis-à-vis a platform?

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Q & A

AA: We've talked with a number of large corporations and although we are not in a situation where we're advocating or recommending a particular operating system, we are certainly in the business of making sure that our software runs across various platforms—and letting users make the choice that makes the most sense to them. They have said that it would be advantageous to have a multitasking environment. Therefore, OS/2 is certainly the way to go.

EB: How do you detect that corporate customers have said this? Is it anecdotal? Have you done studies?

AA: It's been at luncheons, at meetings, at conferences. Whenever we have run into executives talking about their needs and decisions they must make.

BK: You mentioned that you have been working closely with IBM and of course you announced support for OpenDoc architecture yesterday. Now WordPerfect is part of a coalition of Novell, IBM and Apple Computer. How long has this been in the works?

AA: For a while. We have been talking with the people at IBM, Apple, Borland and at Novell. And as you realize, it takes quite a bit of effort to pull something like this together simply because of the significant commitments the corporations make to do something of this magnitude: to produce a cross-platform architecture that works not only across platforms but across products. We're very happy with the commitment we have received from our partners. And are looking forward to providing a link in the Windows environment as well.

EB: We're here at PC EXPO in late June. Within a few weeks, WordPerfect 5.2 for OS/2 will be in GA shipment. But when will people find it in the stores?

AA: Within a month. We're excited because of our integration between 5.2 and the Workplace Shell. We've gone to extreme efforts to make this a product that works well for our customers as they upgrade from DOS, to OS/2.

BK: How does DOS figure into the equation?

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Circle #98

Q & A



AA: Look at the mix. Some of the people going to OS/2 have chosen Windows. Some of those may come back and look at OS/2. But we see a very large majority of people who are going into the OS/2 arena coming from DOS. And if you look at the word processing marketplace on DOS, you see WordPerfect with maybe as much as 85 percent of that marketplace. Most of the people moving into the OS/2 marketplace have experience with and have documents in WordPerfect format.

EB: When you speak of WordPerfect and 85 percent dominance in the word processing marketplace, you're talking about people from casual basement users to Fortune 500 shops. But if OS/2 has its greatest market penetration at the top of the pyramid in corporate shops, how do you bring WordPerfect down into that very broad marketplace of casual users?

AA: In the very large shops people will have OS/2 on their machines at work, but at home they still use DOS. Having WordPerfect compatibility in their documents as you go across is important. Even when older machines are upgraded for larger memory and faster operating systems, you can produce a document in WordPerfect for DOS and enjoy file compatibility with WordPerfect 5.2 for OS/2.

EB: How many people do you expect to be using WordPerfect 5.2 for OS/2 within the coming year?

AA: That's a hard one for me to estimate. We'll be ready to produce hundreds of thousands of copies as the market dictates.

We're hoping that the advent of WordPerfect for OS/2 will both increase OS/2 sales and certainly strengthen our position in the worldwide word processing marketplace.

BK: If someone has a DOS version of WordPerfect they can move over to the OS/2 version without buying a new license. How does that work?

AA: Yes. Our Easy Move system accomplishes that. It includes Windows, DOS and OS/2 and now Macintosh and covers all shipping products. Let's say that you're using DOS on your machine and you upgrade to OS/2. You don't have to buy a new license. Just contact us and get the disks, the actual

software for OS/2 to run on the new OS/2 machine.

BK: So you've preserved your customer's investment.

AA: Yes we have.

EB: Well, there are 2,500,000 users of OS/2 today in the world, half in the United States. Can we agree on that?

AA: Yes.

EB: How many OS/2 users do you realistically expect to see by the end of this year?

AA: I would like to see a 40 to 50 percent increase and I think that we can do it because this next version of WordPerfect works so well with the Workplace Shell. I think customers will see OS/2 and WordPerfect as the right step. If you look at what's available, Ami Pro has made some promises about coming out and they are yet to ship. And DeScribe is out there.

EB: What does DeScribe being out there mean?

AA: To us it means that there is a great opportunity because of our ability to offer consistency and compatibility cross platform that these other products don't offer. People have said that WordPerfect has set a new standard in how products should work with the Workplace Shell. We've gone out of our way to make drag and drop and other capabilities work seamlessly.

BK: So 5.2 is more than just a port from the Windows application to OS/2? You're really taking advantage of features.

Q & A

AA: Yes. Underneath, certainly the technology is still the same to produce the same document format, provide the same compatibility between our various 5.1 and 5.2 versions of WordPerfect as we go across the other platforms. But there are also extra features at the Workplace Shell level. We've added something called ADD, our automatic document detection feature. When you take a new set of documents and transfer them from another operating system to OS/2, those files are not automatically tagged as specific kinds of files. They would come over as ASCII files. So every time you would go to retrieve those files in OS/2, you would be asked questions about file types. Our automatic document detection software allows us to categorize and register those files automatically as WordPerfect files. Then just drag and drop. Our development people really took some extra steps with the Workplace Shell.

EB: I believe your company secured three prominent Workplace Shell experts from IBM in Boca Raton.

AA: Yes, we did. And boy are they ever productive.

EB: And how does IBM feel about that?

AA: I hope they feel good about it since we'll be able to provide additional software that takes advantage of the Workplace Shell. That can only increase the number of sales for OS/2. We really want to be in the forefront in showing support for OS/2. We want other people to see the strengths and advantages of OS/2's Workplace Shell.

EB: When do we expect to see 6.0 coming in shrink wrap?

AA: We don't have a date for that at this point. Sometime next year.

EB: Your firm really has multiple products for OS/2. WordPerfect 5.2 and ultimately 6.0 is only the beginning. Then there is WordPerfect Office.

AA: WordPerfect Office already has a distinct advantage for OS/2. We implemented our server technology for WordPerfect Office and we were greatly surprised—not surprised but gratified—by the response on multitasking. For instance, we have one task that distributes the mail, another one that is checking for conflicts, for group scheduling. Say we were scheduling a meeting and you were on a different server and at a different location, even a different city. Your calendar information comes back for schedule conflict checking.

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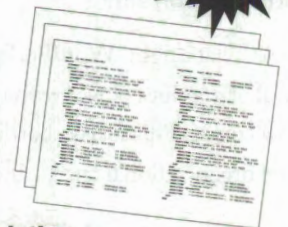
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Circle #66

Q & A

EB: It's only network.

AA: Network, peer to peer, a small office situation, even sneaker net. Speaking of sneaker net, this morning, for instance, I had my notebook computer in my hotel room. I downloaded my mail. Everything will be kept in sync automatically until I connect to the main network. I can answer any of my messages off-line whether I'm in an airplane or a hotel.

EB: Are you also getting ready for remote computing?

AA: There are a number of personal data assistant type of programs and opportunities and WordPerfect Office is certainly one of them. I think we have defined workgroup computing. As we just recently announced, we're providing the work-flow highway for information going from place to place, from computer to computer. That's why it's so essential that our products work across not a single brand of computers or operating systems but rather across many multiple operating environments.

EB: WordPerfect Office for OS/2 will ship when?

AA: We don't have the specific date at this time. We are working very hard to get that up and running. The server technology will be available probably within the next month or two.

EB: And the third OS/2 package would be a presentation product, correct?

AA: That's right, WordPerfect Presentations. It will have a great deal of graphics power with the ability to draw and have text follow curves. Plus it has charting capabilities, automatic outlining and organizational charts directly from the outline.

EB: And all of this will be completely interactive with your office and word processing packages.

AA: Very integrative in terms of working well together. That's the advantage in having OS/2 products that work well together.

BK: Will your WordPerfect Presentations support multimedia applications as well as transparencies?

AA: One of the most exciting things with our presentation software is that it supports multimedia. We have some composers in residence who have produced some classical pieces of music, some western, some jazz. Other types of mood music that can be put with presentations.

EB: That's musical clip art.

AA: Yes, plus, all types of video. As for our graphic clip art, we have organized it into our gallery function. If you want to make a face, you can choose eyes, nose and eyebrows and so on to make your own faces. If you want to have special clip art having to do with holidays, such as Valentine's Day or Christmas or Halloween, we have some images for that. If you want to create a presentation for the business arena, we have people pointing at charts and sitting at desks and computers. For the military, we even have battleships and tanks.

EB: How important is it to you that OS/2 be preloading into systems?

AA: That's very important to us and for a number of reasons. One is just to let people recognize that there really is a choice in operating systems. Once people start multitasking, they will see how much they have been missing if they try to return to the single tasking environment. To us, it will mean people can more readily take advantage of multitasking the capabilities of our software.

EB: Why has it taken IBM so long to arrange for its operating system to be installed into these boxes?

AA: It just takes time to get to that point. There have been other companies that have been working to get systems preloaded.

EB: Does one of those company names begin with an "M"?

AA: Yes, it certainly does. And they've been very successful there. I think that the rest of the industry has seen the importance of bundled arrangements. If you don't, you just lose out on those opportunities. It's really hard to displace what's already gone out with the machine.

EB: Also if it's preloaded, then OS/2 loses its distinction as an end unto itself, and just becomes a facilitator toward applications such as yours.

AA: That's absolutely right.

EB: Which brings up how you think IBM is doing in the marketing and proliferation of OS/2?

AA: I hope that they're more successful than they have been in the past. I have heard glowing reports about version 2.1. I can

continued on page 57



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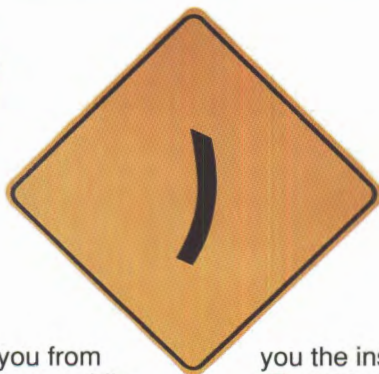
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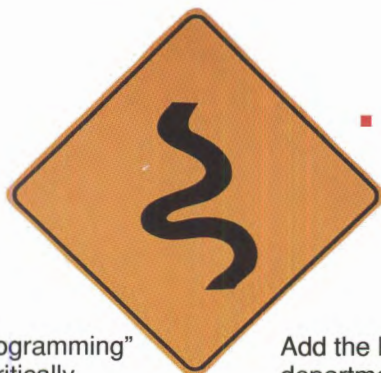
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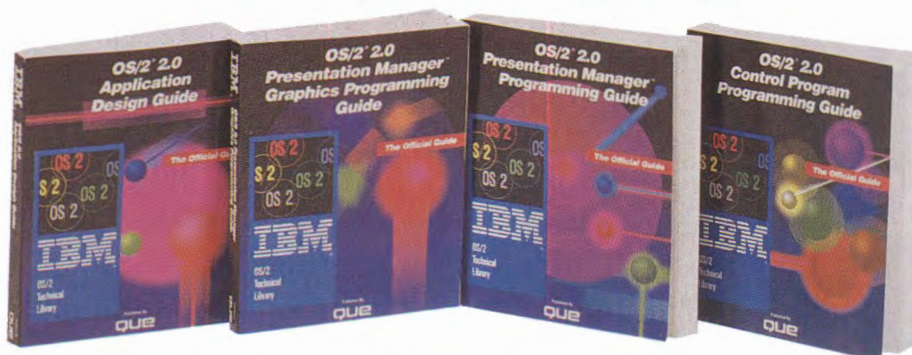
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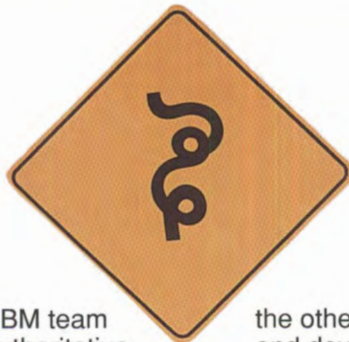
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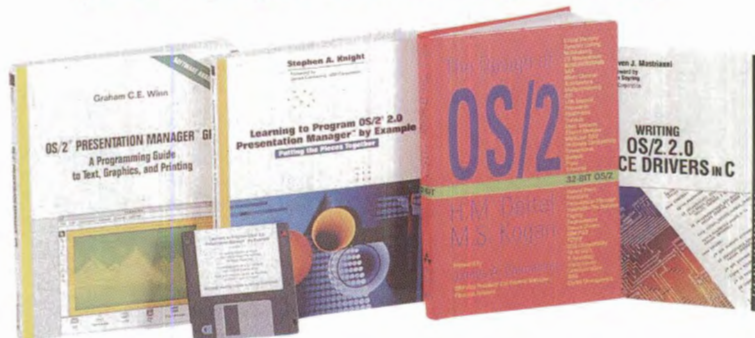
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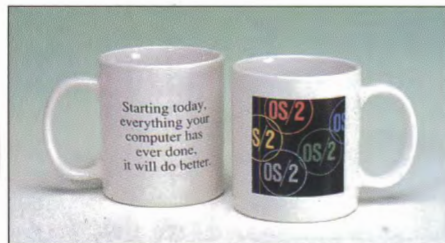
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Q & A

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speak from our own experience with the programmers whom we have on board. Just yesterday, some of our development people were saying, "I'm looking forward to putting OS/2 on my personal machine at home."

EB: Now if you had no computer with you today and you only had a little piece of paper with three lines on it and a pencil and you had to send a note to Lee Reiswig with three recommendations for your marketing program, what would you write on these three lines?

AA: One, I would say continue to be aggressive. I think people want to see that aggressive stand—and they have become better. Two, I would say continue to get OS/2 on machines, prebundled, so that as people get the machines they'll have it. And three, make it widely available inexpensively to gain wide distribution.

EB: How long is it going to take for IBM to overcome all the bad vibes that have been percolating for years?

AA: From what I've been seeing in the press and what I've been

hearing from people who have been talking about OS/2, I think that they've come a long way in overcoming any negative feelings toward the operating environment.

BK: Are you readying a version of WordPerfect for NT?

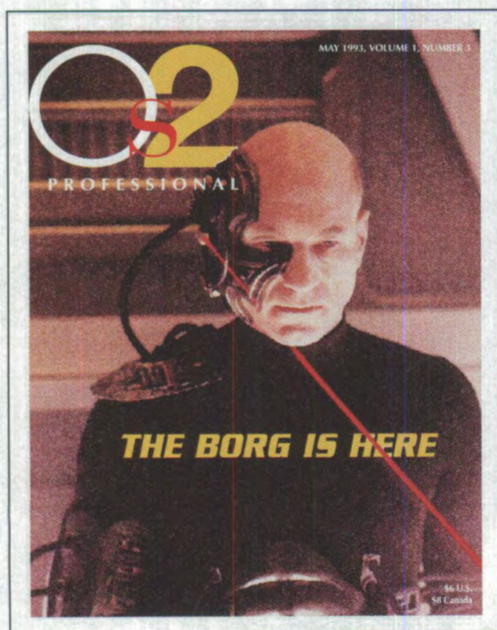
AA: Yes, we are. We can't ignore NT or any major operating environments coming in the future. We have put together a plan that allows our products to share a base set of code. That's what has helped put WordPerfect across multiple platforms.

EB: And when do you believe that we'll see NT in GA? Or is that an oxymoron?

AA: It really is. I don't know when NT is going to ship. We hear from Microsoft that it was expected this year—in July or something. But I remember reading in the press last year—not 1993, but early 1992—that people were predicting we would see NT by the middle of summer.

EB: So how can you develop your product when you don't know when NT is coming out?

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Q & A

AA: We can only begin development. We don't really have any control over when operating systems are going to be released.

BK: One area in which WordPerfect has always been appreciated as a company is in its toll-free support for its products. Why haven't other companies picked up on this?

AA: It's not easy to put toll-free support in place, especially at the magnitude that we have. It's just sort of grown over the years with us. We started with just a few 800 lines. Then it grew to a few switches and now we have multiple switches and hundreds of lines coming into our toll-free support. But we have regarded that as being very important for our users. I can't tell you how many times people have come up to me and said thank you for your support. Just yesterday, I had somebody stop me in the hall and say, "I called up and I was installing Office and your people helped me with that. I've had multiple questions in the past with WordPerfect and have been able to call and receive that great support." We're continuing to build up that support, adding fax support where people can fax in their problems. And the BBS helps us

off-load some of the support for our older products.

BK: Do you think that your support line and its special access helps people make the decision to buy the product rather than borrow a copy?

AA: I think it does. And that is certainly one of the motivations that has kept us strong in that toll-free support arena. We really treasure and value our customers. As we have served them in the past, we will continue to serve them in the future.

BK: So that becomes not just an expense but an investment in the future of your product.

AA: Yes, it really does and people who are looking at it as an expense really miss some of the value of that service.

EB: You seem to have a lot of faith in OS/2, a lot of faith in the future of computing. This isn't just business faith, this must spring from inner faith as well. Tell us about that.

AA: It certainly does. As a member of the Church of Jesus Christ

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Q & A

of Latter-day Saints, faith is a very important motivating factor in my life. And faith is also very important to the inner workings at WordPerfect Corporation. By that I mean that having faith that the work we do, and that the efforts we go through will produce products that are useful to people. We have faith that our work is not something that takes advantage of people or tries to make money out of nothing, but actually provides a good service and a good product that helps people with their work.

EB: The people at WordPerfect all seem to reflect so much energy and so much concern for helping others? Does the faith that you have in making a contribution to society and to your customers imbue the staff?


AA: Well, I think that it's part of the everyday life of those who work at WordPerfect Corporation—where morality and high regard for others is not just a Sunday affair, but is something that continues throughout the week. It means being considerate of one another, being helpful, working together as a team; and working things out together rather than being critical when work needs to

be done or changes need to be made. All we do is done in the spirit of helpfulness. Once our people make commitments, we all strive together as a team, helping one another to meet those commitments.

EB: And now you have a commitment to OS/2.

AA: We certainly do. And it's a very important one for us.

EB: Thank you Mr. Ashton. ♦



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One **UP** & growing

BY CHARLES PELTON

In just two years, One Up has become a leader in OS/2 education. In the company's "spare time" it has developed a clever screen saver, *Window Washer*, screen capture software, *Open Shutter*, with a host of other OS/2 tools and utilities on the drawing board.

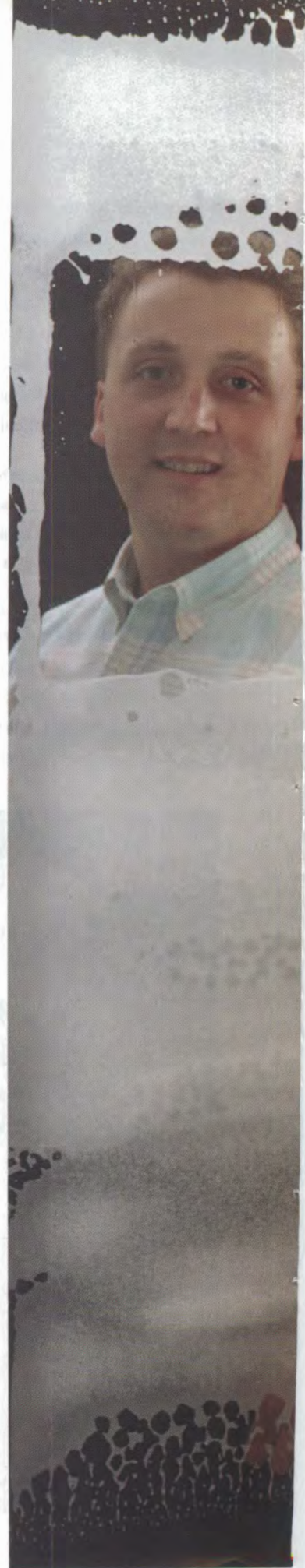
Richard Dews always loved a good risk. Take the time 11 years ago when Dews was a member of the Double Oak (Texas) Volunteer Fire Department. For three years, while in high school and college, Dews had fought mostly grass fires. But one time at 2 o'clock in the morning, Dews' company found itself battling a house fire.

The owners convinced Dews and his colleagues to try to save some valuables from their bedroom, located in a corner of the house not yet engulfed in flames. In went Dews searching for jewelry and papers until—crash!!—the weight of a two-and-a-half-inch, fire-fighting water line burst through the weakened roof, pushing a cedar ceiling beam on to his head. Dews was temporarily knocked unconscious.

Most people wouldn't count the act of entering a burning house as training for the risks of becoming an entrepreneur. But Dews, the founder of One Up Corporation, a fast-growing, OS/2 operating system training, consulting, utilities and tools company based in Dallas, counts risk taking as among the most important prerequisites to start and grow a business.

Unless he were called upon to save a life, Dews, now 30 years of age, wouldn't volunteer to save material possessions from a burning building. Today, he prefers to create material value by putting an industry on fire.

In two short years, One Up has become a leader in OS/2 education. Even IBM's own education subsidiary, Skill Dynamics, subcontracts training to One Up. Moreover, the company also sells highly successful screen saver and screen capture software for computers running OS/2, and has several other OS/2 tools and utilities on the drawing boards or in alpha test. One Up also ports and builds large-scale OS/2 applications for the likes of such corporate heavy-





Jon Morey, Daniel Kardell, Cliff Kinard, and Richard Dews.

VENDOR PROFILE

weights as Borland International, Booz Allen Hamilton and Memorex.

"I would be a fool if I wasn't afraid of risk," says Dews. "But he who manages and controls the fear of risk can effectively grasp the situation and excel."

Here's how Dews defines "excel." From the cost-cutting confines of a home office and a staff that never exceeded three people, One Up chalked up \$160,000 in revenues in 1991. This year, One Up will pull in between \$3 million and \$5 million in sales. This summer it moved into a 24,000-square foot suite of offices just ten minutes from the Dallas-Fort Worth airport, 15 minutes from downtown Dallas and 300 yards from competitor Skill Dynamics. This month, 36 trainers, developers, consultants and administrative staff will have earned paychecks at the full-service OS/2 company.

One Up originated as an OS/2 education company, and continues that tradition today. "I'm not aware of anyone with such a full curriculum on OS/2," says Jeff Yaw, the president of Integrated Training Services, a technology training brokerage based in Westchester, Ohio, near Cincinnati.

Courses cover everything from setting up or administering an OS/2 local-area network to advanced programming (databases, interfaces, communications), to polishing the skills of end users. One such end user, Jeff Hirano, a programmer/analyst at the California State Automobile Association in San Francisco, says his One Up-sponsored, on-site, one week introduction to Presentation Manager "helped bring together a lot of things I'd already been doing" and "added to my confidence in certain areas."

In many of One Up's courses, the formula is simple: give away as many lines of code as you legally can to add to the OS/2 toolkit, its C compiler or any number of other tools. One Up can do that because with so many IBM veterans on the payroll, the company has over 20 years OS/2 coding experience, especially with what is now the OS/2 Workplace Shell.

End-user seminars teach simple functionality, how to configure a computer running OS/2, how to set up applications and how to customize the Workplace Shell. The OS/2 LAN Server Administration Workshop demonstrates everything from installing the server to granting and denying access to resources. One Up offers courses in C, C++, Micro Focus COBOL, OS/2 and Presentation Manager, as well as System Object Model (SOM) programming. Students don't merely walk away with a stack of references. They leave the course with a fully-functioning editor, interface control, color design and screen layout. The

average price per student: \$1,000 for a four-day course.

Then there are One Up's porting and migration workshops. Five- to seven-day courses teach and help students port Windows 3.x, OS/2 16-bit Presentation Manager, DOS and UNIX applications to OS/2 32-bit Presentation Manager Native. All that's required is around \$2,300 per student and the application's source code. Boasts Jon Morey, One Up's manager of classroom education, "I can take six to nine months off someone's learning curve."

One Up doesn't teach generic OS/2, but explains the ins and outs of the operating system in the context of the client's own existing applications, including mission-critical systems. "The people bring in their own applications and they're getting our expertise in a week," adds Dews. "We walk through the problems with them and we help them understand the tools—we sit there with them day and night."

Marilyn Johnson, an IBM workshop program manager, says One Up helps users "fully exploit the program and understand the power of the product." And that translates into more market acceptance for OS/2. Yaw's take is similar when it comes to increasing the rate of OS/2 market penetration. "Technology is not the problem," he says. "The problem is training."

There is no shortage of One Up alumni—some 2,500 analysts, programmers and users from 250 different companies have taken One Up courses in 35 different North American metropolitan areas, spread from San Diego to Halifax.

But education forms only 30 percent of One Up revenues. (That proportion could grow higher if rumors that IBM will no longer automatically refer customers to its Skill Dynamics subsidiary prove to be true.)

In its courses, One Up uses a key porting product that's currently in beta development. Source Migration And Reporting Tool (otherwise known as SMART) helps programmers convert application source code from one operating system to another with remarkable speed. Depending upon a program's complexity, One Up claims that SMART can port up to 90 percent of an application's source code. It does this by helping the programmer size the application, then it actually goes out and converts some of the code itself.

SMART should become commercially available sometime this fall. But One Up already has three products in commercial production. One Up sells an adjustable, configurable, 32-bit OS/2 screen saver called Window Washer. The second version, out this month, can support any kind of screen picture, including full-motion video. One Up sells Window Washer through catalogues

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for \$39.95. It has been marketing a screen capture tool, called Open Shutter, since January, for \$69.95 through direct channels and in some retail software outlets. The tool, used for presentations or brochures, is extremely flexible. It can change color mapping, print, force gray scale, size or rotate image or allow a user to set up a hot key.

Steven Levenson, the New York City-based author of *Now That I Have OS/2 2.1 on My Computer, What Do I Do Next?*, used Open Shutter to produce his book. "I can change [the image] if it's not coming out right," he says. "With Open Shutter, even after I capture it, I'm not stuck."

In July, One Up bought San Diego-based SourceLine Software. The move added SourceLink, an OS/2 32-bit programming development tool that functions as a hyperlink source code processor into One Up's product suite. SourceLink, brings application source code to a point where it is well organized. The product is a highly integrated editor that will work well with One Up's SMART technology and in its application migration workshops.

Another One Up product development is Art Thief, an OS/2 art utility which should be available before the end of the year. The tool allows an end user to scan through his or her hard drive for PCX, tiff, bitmapped, IMG or GIF formatted files. The program then displays the images in its own private gallery, complete with frames and a tiled floor. The user then will be able to edit color, rotate the image and output files to a desired destination in a variety of file formats. The utility also will allow the user to force gray scale, attach a file to the clipboard or eliminate a file with the shredder.

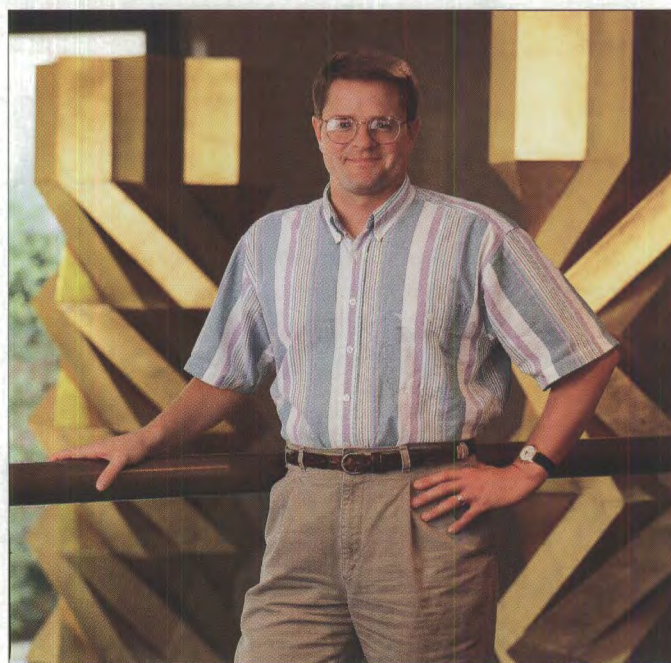
One Up's consulting division ports and builds large-scale OS/2 applications. It has built a Windows and OS/2 graphical user interface to let users of IBM's ThinkPad 720 lock, unlock, password protect and review their PC-MCIA cards. The company has created applications that let end users dial into an OS/2 LAN or Novell Server accessing either Ethernet or Token Ring topologies. And it also has helped port a Windows-based travel reservation system.

One Up has even become an IBM marketing partner. IBM and One Up are collaboratively marketing OS/2 and PSP (Personal Software Product) LAN and OS/2 in IBM's marketing Area 10 (Texas, Colorado, Louisiana, Kansas and Oklahoma).

Dews has surrounded himself with a talented staff, mostly with extensive IBM experience. There's Jon Morey, the aforementioned head of classroom operations. Daniel Kardell is the chief



Richard Dews brainstorms with Daniel Kardell (application development), Jon Morey (classroom operations), and Cliff Kinard (marketing).



Richard Dews, founder of One Up.

architect and drives application development. Cliff Kinard, is the company's marketing expert. And John Boudreaux is the man Dews refers to as the "System Object Models guru."

For Richard Dews, "risk" has taken on a new meaning. He may not be entering burning bedrooms any more. But he's created a diversified company and surrounded himself with a talented staff. One Up looks like it has no where to go—but way up. ♦

Charles Pelton, a business and technology writer and editor, runs FTP Associates in Oakland, California. FTP is a full-service information packaging company, producing RFP's for industry and finished articles for magazines.

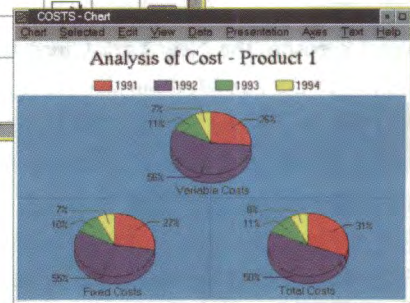
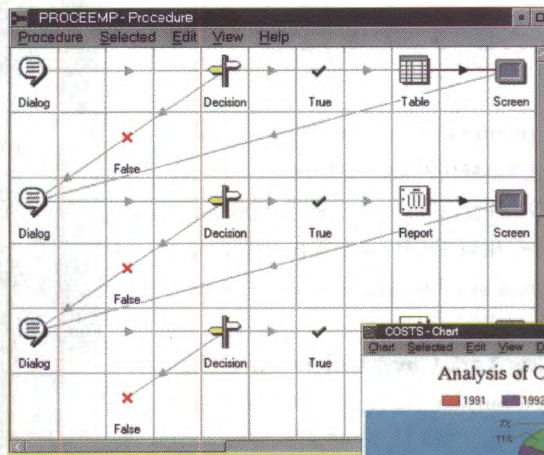
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The screenshot shows a window titled "COSTS - Table" with a menu bar (Table, Selected, Edit, View, Data). It displays a data table with columns for Site, Description, Sales, Volume, Unit Price, Revenue, Costs, Gross Profit, and Product. The table contains data for Washington, including Sales, Volume, Unit Price, Revenue, Costs, Gross Profit, and Product. The table is sorted by Site.

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The Information Presentation Facility

Part II: Adding Online Help

BY TODD B. CROWE

Virtually all OS/2 Presentation Manager (PM) applications include online help. Of those, most use a standard implementation scheme (called the Information Presentation Facility, or IPF) to provide that help. The first part of this series (May Code Cache) described how to write online documents using the IPF. In this second and final part you will learn how to add online help to an application using IPF-formatted files. Before you begin, you should already be familiar with the IPF tag language and the basics of writing an OS/2 PM application.

Preparing help screens is similar to generating online documentation. First use your favorite word processor or editor to enter the text along with formatting codes (tags) that specify attributes and links (the same codes covered in the May installment). When the document is finished you're ready to compile the document with the IPF compiler. At this point the text is usable as online documentation. However, several additional steps are required to integrate this documentation with your application to provide online help.

Code Support

The first step, obviously, is to write the application that will use online help. Listing 1 contains the C source code for a skeletal PM application. The sample application has the typical accoutrements of any PM program, including a menu with selections for creating, saving and printing files. The sample program already includes the code required to support online help, but let's assume for the moment that it does not. Before adding the supporting code, we must first define the online help requirements. For example, we would like a help menu that provides access to the various parts of the online help, a context sensitive link for each of the menu options and extended help for the application. In addition, many developers add a dialog box which provides product information and has its own help link.

With these requirements in mind, we may now add online help to the application. From the application's point of view, it must first create an instance of the help manager (which is essentially

LISTING 1

The C Program, EXAMPLE.C

```
#define INCL_PM

#include <os2.h>
#include "example.rch"

HAB hAB = NULLHANDLE;
HWND hWndClient = NULLHANDLE;
HWND hWndFrame = NULLHANDLE;
HWND hWndHelp = NULLHANDLE;

VOID HelpError(ULONG);
VOID HelpInit(VOID);
MRESULT EXPENTRY DlgProc(HWND, ULONG, MPARAM, MPARAM);
MRESULT EXPENTRY WndProc(HWND, ULONG, MPARAM, MPARAM);

int
main(void)
{
    HMQ hMQ;
    QMSG qMsg;

    static ULONG flFlags = FCF_SYSMENU | FCF_TITLEBAR |
                           FCF_MENU | FCF_SIZEBORDER |
                           FCF_MINMAX | FCF_TASKLIST |
                           FCF_SHELLPOSITION;

    hAB = WinInitialize(0);
    hMQ = WinCreateMsgQueue(hAB, 0);

    WinRegisterClass(hAB, "Help Class", WndProc,
                    CS_SIZEREDRAW, 0);

    HelpInit();

    hWndFrame = WinCreateStdWindow(HWND_DESKTOP,
                                   WS_VISIBLE, &flFlags, "Help Class",
                                   "Online Help Example", 0, NULLHANDLE,
                                   IDW_EXAMPLE, &hWndClient);

    while (WinGetMsg(hAB, &qMsg, 0, 0, 0))
        WinDispatchMsg(hAB, &qMsg);

    if (hWndHelp != NULLHANDLE) {
        WinDestroyHelpInstance(hWndHelp);
    }

    WinDestroyWindow(hWndFrame);
}
```


CODE CACHE

```

WinDestroyMsgQueue(hMQ);
WinTerminate(hAB);

return 0;
}

MRESULT EXPENTRY
DlgProc(HWND hWnd, ULONG Msg, MPARAM Param1, MPARAM Param2)
{
    switch (Msg) {
        case WM_COMMAND:
            switch (SHORTFROMMP(Param1)) {
                case DID_OK:
                    WinDismissDlg(hWnd, TRUE);
                    WinDestroyWindow(hWnd);
                    return ((MRESULT) FALSE);
            }
            break;

        case WM_HELP:
            if (hWndHelp != NULLHANDLE)
                WinSendMsg(hWndHelp, HM_DISPLAY_HELP,
                    MPFROMSHORT(1), MPFROMSHORT(HM_RESOURCEID));
            return ((MRESULT) FALSE);

        case WM_INITDLG:
            if (hWndHelp != NULLHANDLE)
                WinAssociateHelpInstance(hWndHelp, hWnd);
            break;
    }

    return WinDefDlgProc(hWnd, Msg, Param1, Param2);
}

MRESULT EXPENTRY
WndProc(HWND hWnd, ULONG Msg, MPARAM Param1, MPARAM Param2)
{
    HPS hPS;

    switch (Msg) {
        case WM_CREATE:
            if (hWndHelp != NULLHANDLE)
                WinAssociateHelpInstance(hWndHelp, hWnd);
            break;

        case WM_COMMAND:
            switch (SHORTFROMMP(Param1)) {
                case IDM_HELP_USINGHELP:
                    if (hWndHelp != NULLHANDLE)
                        WinSendMsg(hWndHelp, HM_DISPLAY_HELP, 0L, 0L);
                    break;

                case IDM_HELP_PRODINFO:
                    WinDlgBox(HWND_DESKTOP, hWndFrame, DlgProc,
                        NULLHANDLE, IDD_EXAMPLE, (PVOID)&hWnd);
                    break;
            }
            return ((MRESULT) FALSE);

        case HM_ERROR:
            HelpError((ULONG)LONGFROMMP(Param1));
            return ((MRESULT) FALSE);
    }
}

```

the brains of the IPF). The help manager reads the compiled online help file and decides how and when to display the appropriate help screens. To create an instance, call **WinCreateHelpInstance()** as shown in the **HelpInit()** function of Listing 1. **WinCreateHelpInstance()** accepts two arguments: the application's anchor block handle and the address of a **HELPINIT** structure. Of the several data items the **HELPINIT** structure passes along to the help manager, there are currently two primary items of interest: where to find the online help (**pszHelpLibraryName**) and the title of the help window (**pszHelpWindowTitle**). Upon completion, **WinCreateHelpInstance()** returns a handle to the help manager instance—this handle becomes the basis for all further communication between the application and the help manager. If the help manager instance is not created properly, **HelpInit()** displays an error informing the user that online help is not available.

Once the application has created the help instance, it must associate that instance with a chain of windows through the **WinAssociateHelpInstance()** function. Thereafter, any requests from



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the windows in the chain will be processed by the associated instance. The application derives two other important benefits from this association. First, the help manager uses the position of the associated window as a base for positioning the help window when it is displayed. Second, the help manager can use the association to select a help panel (called a *heading window* for online documents) when the user requests extended help. The example application in Listing 1 contains two references to `WinAssociateHelpInstance()`: one for the client window and another for the **About** dialog box.

Now that the proper associations are in place, you need a triggering event to activate the help system. The standard approach, passing the `HM_DISPLAY_HELP` message to the help system, is the method of choice in this example. The process begins with a user request for help through the F1 key or the **Help** button—this generates a `WM_HELP` message in the message queue. Consider the **About** dialog box. When `DlgProc()` processes `WM_HELP`, it passes the `HM_DISPLAY_HELP` message to the help manager, thus activating extended help for the dialog box.

```
case WM_PAINT:
    hPS = WinBeginPaint(hWnd, NULLHANDLE, NULL);
    GpiErase(hPS);
    WinEndPaint(hPS);
    return ((MRESULT) FALSE);
}

return WinDefWindowProc(hWnd, Msg, Param1, Param2);
}

VOID
HelpError(ULONG Error)
{
    CHAR HelpBuffer[80], HelpTitle[80];

    if ((hWndHelp) && (Error == HMERR_NO_MEMORY)) {
        WinLoadString(hAB, NULLHANDLE, IDS_HELP_TERM,
            sizeof(HelpBuffer), HelpBuffer);

        WinLoadString(hAB, NULLHANDLE, IDS_HELP_TERM_TITLE,
            sizeof(HelpTitle), HelpTitle);

        WinMessageBox(HWND_DESKTOP, HWND_DESKTOP,
            HelpBuffer, HelpTitle, 0,
            MB_OK | MB_APPLMODAL | MB_MOVEABLE);

        WinDestroyHelpInstance(hWndHelp);
    }
}
```

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```

} else {
    WinLoadString(hAB, NULLHANDLE, Error,
        sizeof(HelpBuffer), HelpBuffer);

    WinLoadString(hAB, NULLHANDLE, IDS_HELP_TERM_TITLE,
        sizeof(HelpTitle), HelpTitle);

    WinMessageBox(HWND_DESKTOP, HWND_DESKTOP,
        HelpBuffer, HelpTitle, 0,
        MB_OK | MB_APPLMODAL | MB_MOVEABLE);
}
}

VOID
HelpInit(VOID)
{
    CHAR    HelpBuffer[80];
    HELPINIT hInit;

    hInit.cb                = sizeof(HELPINIT);
    hInit.ulReturnCode      = 0;
    hInit.pszTutorialName   = NULL;
    hInit.phtHelpTable      =
        (PHELPTABLE)MAKELONG(IDH_EXAMPLE, 0xFFFF);
    hInit.hmodHelpTableModule = 0;
    hInit.hmodAccelActionBarModule = 0;
    hInit.idAccelTable      = 0;
    hInit.idActionBar       = 0;
    hInit.pszHelpWindowTitle = "Online Help Example";
    hInit.fShowPanelId      = CMIC_HIDE_PANEL_ID;
    hInit.pszHelpLibraryName = "EXAMPLE.HLP";

    hWndHelp = WinCreateHelpInstance(hAB, &hInit);

    if ((!hWndHelp) || (hInit.ulReturnCode)) {
        WinLoadString(hAB, NULLHANDLE, IDS_NO_HELP,
            sizeof(HelpBuffer), HelpBuffer);

        WinMessageBox(HWND_DESKTOP, HWND_DESKTOP,
            (PSZ)HelpBuffer, "Online Help Example",
            0, MB_OK | MB_APPLMODAL | MB_MOVEABLE);

        WinDestroyHelpInstance(hWndHelp);
    }
}

```

LISTING 2

THE RESOURCE FILE, EXAMPLE.RC

```

#include <os2.h>
#include <pmhelp.h>
#include "example.rch"

DLGTEMPLATE IDD_EXAMPLE LOADONCALL MOVEABLE DISCARDABLE
{
    DIALOG "About...", IDD_EXAMPLE, 12, 6, 148, 84,
        WS_VISIBLE | WS_CLIPSIBLINGS | WS_SAVEBITS |
        FS_DLGBOARDER, FCF_TITLEBAR | FCF_SYSMENU
    {

```

continued on page 70

Looking at the `WinSendMsg()` call, you will see that parameter three is set to a value of 1—this tells the help manager to display the help panel with ID 1. The next parameter, `HM_RESOURCEID`, tells the help manager that value is a resource ID number. (Help panels may also be referenced by title.)

In the event of an error, the help manager sends an `HM_ERROR` message to the currently associated window. The example application passes the error value to the `HelpError()` function which displays an appropriate error message on the screen. Finally, before the application terminates, it must destroy the help manager instance with a call to `WinDestroyHelpInstance()`. In the example this occurs after the PM message loop terminates.

Resources

Once you have the programming in place (in both the host application language and the IPF code) you must define resources for the help pull-down menu structure and for linking the existing resources with the compiled online help file. Listings 2 and 3 contain the resource and resource header files for the example application.

The `HELPTABLE` and `HELPSUBTABLE` resources near the end of Listing 2 define the linkages between the online help panels and the application windows, controls, menu items and other objects. `HELPTABLE` resources associate an application window with a `HELPSUBTABLE`. Each `HELPTABLE` resource, in turn, may contain one or more `HELPIITEMs`; each defining an application window ID, the associated `HELPSUBTABLE` ID and a reference to the appropriate extended help panel. Likewise, a `HELPSUBTABLE` resource may have one or more `HELPSUBITEMs` defining a help panel and its associated menu item, control or other object. For example, suppose a user requests context sensitive help for the **Save** menu item. The example application would step through the following series of events:

- The application invokes the instance of the help manager associated with the primary window.
- The help manager instance associates the window ID of the active window (`IDW_EXAMPLE`) with a particular `HELPSUBTABLE` resource (`IDW_EXAMPLE`).
- The help manager instance associates the menu ID of the **Save** menu (`IDM_FILE_FILE_SAVE`) with a particular help panel ID (7).
- The help manager instance displays the help panel with ID 7.

Any application that provides online help should also include a

CODE CACHE

help menu. Examine the **Help** SUBMENU resource in Listing 2. The menu provides access to the online help index, extended (or general) help, the IPF's built-in help for using online help and a dialog box which displays product information. Once the resources are set up, the help index and extended help options are automatically supported by the help manager and the default window processing (via the SC_HELPINDEX, SC_HELPEXTENDED and MIS_SYSCOMMAND attributes). Note that the IPF's built-in help for using online help is not supported in the same way. If you look at Listing 1 under the WM_COMMAND message handling in **WndProc()**, you will see a **HM_DISPLAY_HELP** message. The two 0 message parameters force the help manager to display the appropriate help panel. Note that the help index and extended help could be displayed in a similar manner. (There are special help manager messages to display these and other built-in help panels.)

If the user selects the last item on the **Help** menu, the application displays a dialog box with product information. The **BS_HELP** attribute of the **Help** push button is the only item of note here. When the user selects the button while the **BS_HELP** attribute is active, the system generates a **WM_HELP** message instead of a **WM_COMMAND** message.

IPF Tag File

The third and final step, creating the IPF tag file, completes the addition of online help to the application. (See Listing 4 for the example IPF tag file.) If you are familiar with the example from the first part of this series, you will notice that there is only one significant difference between the tag file formats: the panel headings for online help use only the **res=** attribute to identify the headings.

As I explained in the first part of this series, headings may be identified by the **res=**, **name=** or **id=** attribute. Each has its own limitations; e.g., only the **res=** attribute may be used as a heading for online help. The **res=** attributes are limited to values between 1 and 64000 and must match the values used in the C source code and the resource file. The actual integer values used are arbitrary, they simply provide a means of correlating help panels with resources and **HM_DISPLAY_HELP** messages. However, you should probably use the same values as used for other resources. For example, you could use 20001 as the resource ID for the **New** help panel. (You may even be able to use **IDM_FILE_NEW** if you have an IPF pre-compiler. At least two are available as freely distributable software.)

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Circle #112

CODE CACHE

Summary

You can add online help to any PM application with three basic steps: make source code changes to create and support a help instance; define resources to link application resources with the online help panels and the built-in functions of the help manager; and write the online help. The time spent learning these techniques becomes an investment in creating better quality applications. Once you have mastered the three basic steps you will be well on your way to waltzing through the design of user-friendly applications. ♦

LISTING 2 *continued from page 68*

```
LTEXT "Online Help Example", -1, 33, 62, 84, 8,
    WS_VISIBLE | WS_GROUP
LTEXT "By", -1, 68, 51, 12, 8,
    WS_VISIBLE | WS_GROUP
LTEXT "Todd B. Crowe", -1, 43, 40, 62, 8,
    WS_VISIBLE | WS_GROUP
DEFPUSHBUTTON "Ok", 1, 22, 2, 40, 14,
    WS_VISIBLE | WS_GROUP | WS_TABSTOP
PUSHBUTTON "Help", DID_HELP, 86, 2, 40, 14,
    WS_VISIBLE | WS_TABSTOP | BS_HELP
}

MENU IDW_EXAMPLE
{
    SUBMENU "--File",          IDM_FILE_FILE, MIS_TEXT
    {
        MENUITEM "--New",      IDM_FILE_FILE_NEW, MIS_TEXT
        MENUITEM SEPARATOR
        MENUITEM "--Save",     IDM_FILE_FILE_SAVE, MIS_TEXT
        MENUITEM "Save ~as...", IDM_FILE_FILE_SAVEAS,
    MIS_TEXT
        MENUITEM SEPARATOR
        MENUITEM "--Print",    IDM_FILE_FILE_PRINT, MIS_TEXT
    }
    SUBMENU "--Help",         IDM_HELP_HELP
    {
        MENUITEM "Help ~index", SC_HELPINDEX, MIS_SYSCOMMAND
        MENUITEM "--General help", SC_HELPEXTENDED,
            MIS_SYSCOMMAND
        MENUITEM "--Using help", IDM_HELP_USINGHELP
        MENUITEM SEPARATOR
        MENUITEM "--About...",  IDM_HELP_PRODINFO
    }
}

STRINGTABLE
{
    IDS_HELP_TERM,          "Help Terminated Due to
Error"
    IDS_HELP_OCCRD,         "Help Error Occurred"
    IDS_HELP_TERM_TITLE,    "Help Error"
    HMERR_NO_FRAME_WND_IN_CHAIN, "No Frame in Window Chain"
    HMERR_INVALID_ASSOC_APP_WND,
```

```
        "Invalid Association Application Window"
    HMERR_INVALID_ASSOC_HELP_INST,
        "Invalid Association Instance"
    HMERR_INVALID_DESTROY_HELP_INST,
        "Invalid Destroy Help Instance"
    HMERR_NO_HELP_INST_IN_CHAIN,
        "No Help Instance In Chain"
    HMERR_INVALID_HELP_INSTANCE_HDL, "Invalid Help Instance"
    HMERR_INVALID_QUERY_APP_WND,
        "Invalid Query Application Window"
    HMERR_HELP_INST_CALLED_INVALID,
        "Help Instance Called Invalid"
    HMERR_HELPTABLE_UNDEFINE,        "HelpTable Undefined"
    HMERR_HELP_INSTANCE_UNDEFINE,    "Help Instance
Undefined"
    HMERR_HELPITEM_NOT_FOUND,        "Help Item Not Found"
    HMERR_INVALID_HELPSUBITEM_SIZE,
        "Invalid HelpSubItem Size"
    HMERR_HELPSUBITEM_NOT_FOUND,     "HelpSubItem Not Found"
    HMERR_INDEX_NOT_FOUND,           "Index Not Found"
    HMERR_CONTENT_NOT_FOUND,         "Content Not Found"
    HMERR_OPEN_LIB_FILE,             "Open Library File"
    HMERR_READ_LIB_FILE,             "Read Library File"
    HMERR_CLOSE_LIB_FILE,            "Close Library File"
    HMERR_INVALID_LIB_FILE,          "Invalid Library File"
    HMERR_NO_MEMORY,                 "No Memory"
    HMERR_ALLOCATE_SEGMENT,           "Allocate Segment"
    HMERR_FREE_MEMORY,               "Free Memory"
    HMERR_PANEL_NOT_FOUND,           "Panel Not Found"
    HMERR_DATABASE_NOT_OPEN,         "Database Not Open"
}

HELPTABLE IDH_EXAMPLE
{
    HELPITEM IDD_EXAMPLE, IDD_EXAMPLE, IDD_EXAMPLE
    HELPITEM IDW_EXAMPLE, IDW_EXAMPLE, IDW_EXAMPLE
}

HELPSUBTABLE IDD_EXAMPLE
{
    HELPSUBITEM DID_OK,              3
    HELPSUBITEM DID_HELP,            IDD_EXAMPLE
}

HELPSUBTABLE IDW_EXAMPLE
{
    HELPSUBITEM IDM_FILE_FILE,       5
    HELPSUBITEM IDM_FILE_FILE_NEW,   6
    HELPSUBITEM IDM_FILE_FILE_SAVE,  7
    HELPSUBITEM IDM_FILE_FILE_SAVEAS, 8
    HELPSUBITEM IDM_FILE_FILE_PRINT, 9
}
```

LISTING 3

THE RESOURCE HEADER FILE, EXAMPLE.RCH

```
#define IDH_EXAMPLE      1
#define IDD_EXAMPLE      1
```


CODE CACHE

```
#define IDW_EXAMPLE          2

#define DID_HELP             101

#define IDM_FILE_FILE        20000
#define IDM_FILE_FILE_NEW    20001
#define IDM_FILE_FILE_SAVE   20002
#define IDM_FILE_FILE_SAVEAS 20003
#define IDM_FILE_FILE_PRINT  20004

#define IDM_HELP_HELP         20005
#define IDM_HELP_USINGHELP    20006
#define IDM_HELP_PRODINFO     20007

#define IDS_NO_HELP           1
#define IDS_HELP_TERM         2
#define IDS_HELP_OCCRD        3
#define IDS_HELP_TERM_TITLE   4
```

LISTING 4

THE IPF TAG FILE, EXAMPLE.IPF

```
.* IPF tag file for Online Help Example
.*
:userdoc.
:title.Help for Online Help Example
.*
.*
:h1 res=1.About...
:p.
This is the general help text for the "About..." panel.
.*
:h2 res=3.Ok
:p.
The :hp2.Ok:ehp2. button accepts and closes the panel.
.*
:h2 res=101.Help
:p.
The :hp2.Help:ehp2. button displays information about
the panel.
.*
.*
:h1 res=2.Online Help Example
:p.
This is the general help text for the primary window.
.*
:h2 res=5.File
:p.
The :hp2.File:ehp2. menu selections provide a means of
manipulating files.
.*
:h2 res=6.New
:p.
Select :hp2.New:ehp2. to create a new file.
.*
:h2 res=7.Save
:p.
Select :hp2.Save:ehp2. to save the current file with the
current file name.
.*
:h2 res=8.Save as...
```

```
:p.
Select :hp2.Save as...:ehp2. to save the current file
with a new name.
.*
:h2 res=9.Print
:p.
Select :hp2.Print:ehp2. to print the current file.
.*
:euserdoc.
```

LISTING 5

THE DEFINITION FILE, EXAMPLE.DEF

```
NAME          EXAMPLE WINDOWAPI
STUB           'OS2STUB.EXE'
DESCRIPTION    'Online Help Example'
CODE           PRELOAD MOVEABLE
DATA           LOADONCALL MOVEABLE MULTIPLE READWRITE
HEAPSIZE       4096
STACKSIZE      16384
```

LISTING 6

THE MAKE FILE, EXAMPLE.MAK

```
.SUFFIXES : .EXE .DLL .OBJ .ASM .C .H .RCH      \
          .RES .RC                               \
          .HLP .IPF

.RC.RES :
    rc -r $*.RC

.IPF.HLP :
    ipfc $*.IPF

.C.OBJ :
    icc /C+ /Kb+ /W3 /Sp $*.C

.OBJ.EXE :
    link386 /NOE /NOI /ALIGN:4 /BASE:0X10000      \
        EXAMPLE.OBJ, EXAMPLE.EXE, , OS2386.LIB, \
        EXAMPLE.DEF
    rc $*.RES $*.EXE

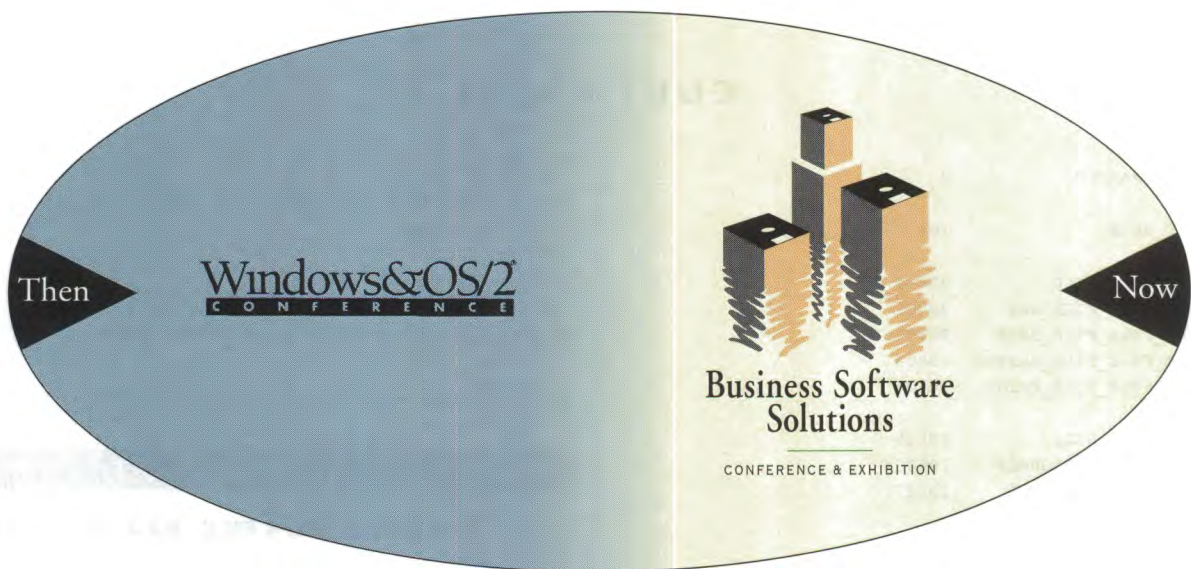
ALL: EXAMPLE.EXE EXAMPLE.HLP

EXAMPLE.RES : EXAMPLE.RC EXAMPLE.RCH

EXAMPLE.OBJ : EXAMPLE.C EXAMPLE.RCH

EXAMPLE.HLP : EXAMPLE.IPF EXAMPLE.RCH EXAMPLE.RC

EXAMPLE.EXE : EXAMPLE.OBJ EXAMPLE.RES           \
        EXAMPLE.DEF EXAMPLE.MAK
```

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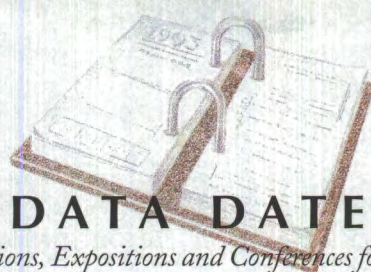


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COMPILED BY KAREN THOMAS

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Contact: Interface Group, (617) 449-6600.

SEPTEMBER 21-23

UNIX EXPO

New York, NY

The recent PC EXPO proved New York to be the place to be for conferences. More than 95,000 people attended PC EXPO, which is produced by Bruno Blenheim. UNIX EXPO, another happening by Blenheim, will also be taking advantage of New York's exciting ambiance. The questions at the conference will be: Is there a future for UNIX? With OS/2 and Windows NT providing the same functionality with an easier-to-use interface and more

applications, what is going to happen to UNIX?

Charles Wang, CEO of Computer Associates, will be the UNIX EXPO keynoter for the tenth year. Wang's speech will cover software in a distributed computing environment or—how do you use UNIX in corporate America?

Among the exhibitors at the conference will be Apple, Digital Equipment Corp., Hewlett-Packard and IBM.

Contact: (800) 829-EXPO, ext. 9107.

SEPTEMBER 21-23

MOBILE WORLD

San Jose, CA

Sponsored by *Mobile Office Magazine*, *Computerworld*, *Computer Reseller News* and *Networking Computing*, the Mobile World Conference promises to be an important one for information for the fast-growing mobile and pen-based computer market. Analysts Amy Wohl and Tim Bjarin and pen expert Vern Raburn from Slate Corporation, a pen-based computer developer, will be among the speakers tackling the diverse challenges of mobile computing.

Contact: DCI, (508) 470-3880.

OCTOBER 17-20

OS/2 PROFESSIONAL INTERCHANGE

Palm Springs, CA

"The OS/2 Event of the Year" will feature up-to-the-minute and in-depth technical OS/2 developments in the realms of LAN, C++, object oriented programming, pen computing, database, multimedia and more. The emphasis will be on version 2.1. Complimentary OS/2 software will be provided for every registrant from WordPerfect, Computer Associates and IBM, with additional offerings from Lotus, DeScribe and Stac Electronics.

With keynoters John Soyering and Lois Dimpfel of IBM; John C. Dvorak, *PC Magazine*; and Will Zachmann, *OS/2 Professional*, the conference will provide the latest insights into OS/2.

A unique feature of the event will be a round table of renowned computer writers and hot business press. Edwin Black, publisher of *OS/2 Professional*, will be the moderator for the "Media Ethics" panel, which will delve into OS/2 and the media.

Highlight of the conference will be the First Annual OS/2 Professional Awards. Categories include Man of the Year and OS/2 Product of the Year.

Now that OS/2 2.1 has proved itself worthy of mass-market success, it's time to

find out how to profit from OS/2.

Contact: CT Meeting Planners, (800) GET-OS20, (800) 438-6720.

AUGUST- SEPTEMBER

OS/2 ON TOUR

The IBM OS/2 Tour '93, a two-day event, continues to be held all across America.

Included on day one is an overview and demonstration of the Workplace Shell, multitasking in general and the use of various DOS and Windows applications. On the second day the day one agenda is covered with a more detailed look at 2.1, as well as a peek into the future. A question and answer session follows.

Upcoming dates include: Baltimore, August 18-19; Miami, August 25-26; Buffalo, September 1-2; Milwaukee, September 8-9; St. Louis, September 15-16; Austin, September 22-23; and Raleigh-Durham, September 29-30.

Contact: The Right Source, (800) 766-4344. ♦

Send meeting & conference notices to Data Dates, OS/2 Professional, c/o International Features, 172 Rollins Ave., Rockville, MD 20852. Fax: (516) 549-7575. Compuserve: 73740,2661. MCI Mail: 310-3946..



The Ethical Revolution

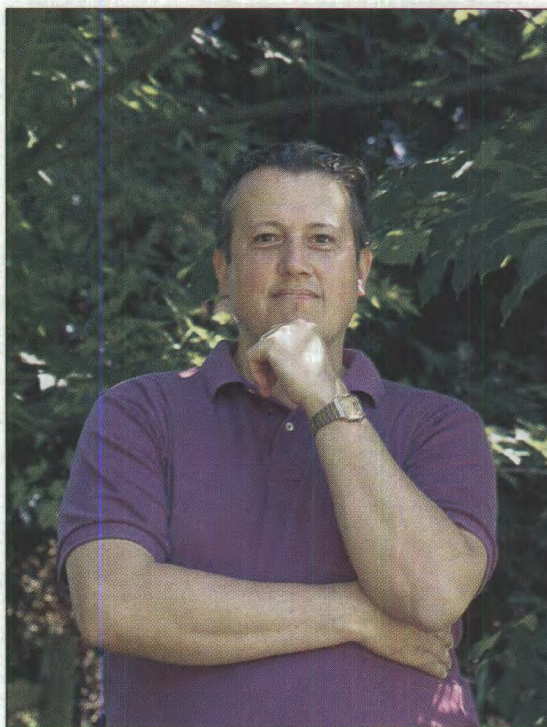
David Bryan Whittle cares about everything in his life, and is an IBMer through and through. Because of this, he believes in IBM's basic corporate values, and that's what caused all the ruckus.

BY WAYNE RASH JR.

Dave Whittle doesn't look like the kind of guy who would topple an empire. In fact, he looks a lot like what he is: A devoted husband and father, a leader in his church, a man of deep ethical principles and a man who cares about life. You can see the love that permeates his life as he and his children rise and fall above their backyard trampoline—a place that forms the center of closeness for this most caring of families.

Yet, it is this same caring that led to a memo which some say led to the corporate landslide that ended the reign of John Akers as IBM's CEO. David Bryan Whittle, it seems, cares about everything in his life, and Whittle is an IBMer through and through. Because of this, Whittle believes in IBM's basic corporate values, and that's what caused all the ruckus.

Today, Dave Whittle is doing a job he loves for a company he loves, and he's doing it very well indeed. "I'm an OS/2 Advocate," Whittle says simply when asked to explain his job title. Colleagues can only chuckle at the idea that Whittle is so important, but he doesn't even have a business card. Actually, he's more than just an advocate. Whittle is the eyes and ears of IBM in the developer and user community. He's the driving force behind IBM's Team OS/2, and he's working to expand OS/2 to new horizons around the world. Some call him "Mr. OS/2," and for good reason.



"There's no such thing as a typical day," Whittle says, as he describes the structure of his role at IBM. He says he usually starts his morning by telling his computer to download messages from bulletin boards and online services, which he reads after he finishes his breakfast. "I go through forums and look for interesting threads," he explains. Whittle is IBM's point man in the online community, and he spends part of his day reading what users and developers have said about OS/2 since the previous day.

Online Advocate

When he thinks it will make a difference, Dave Whittle will immerse himself into online discussions. He defends OS/2 against wrongful attacks, he explains to people what it can do, and he helps users find someone within IBM with whom they can talk when they need solutions that they can't find through normal channels. He does this all before he goes in to work in the morning. "Mostly I just dispel myths about IBM," he says.

Whittle spends much of his day working from his home office. Still, he does have an office at IBM's Gaithersburg, Maryland, facilities. "I go to work because it's easier to check PROFS there," Whittle explains. "I also do projects." One such project recently took Whittle to Moscow, where he met with the director of MIS at the Kremlin to discuss the future of OS/2 in Russia.

USER PROFILE

These evangelistic efforts on OS/2's behalf require strength at the core, and Whittle frequently finds himself immersed in discussions about the merits and direction of OS/2 with others inside IBM. He spends a great deal of time keeping lines of communications open on IBM's internal forums, just as he does on the outside. He takes such a deep interest in how OS/2 is presented to the world that you'd think his life revolved around IBM. You'd be wrong.

The 16-Hour Decision

Thirteen years ago, Dave Whittle was pressing the microcomputer revolution forward from a different vantage point altogether. He was working in a computer store in an Orem, Utah, shopping mall. "We were selling Atari computers to everyone from Donny Osmond to programmers at WordPerfect," Whittle said. "But we were too successful. I was spending 16 hours a day there."

Whittle realized that he had to have a life outside of work, so he left retailing to earn an MBA degree at Brigham Young University. The next summer, Goldman, Sachs, the investment banking firm, tried to recruit him. "I visited their office in San Francisco," Whittle recalled, "but by the time I left, I had a headache. I realized it wasn't for me. The idea of sticking a phone in both ears and yelling at people all day long—that's just not the kind of life I want to lead, I don't care how much it pays."

"After that, I talked to IBM, Hewlett-Packard and the others," Whittle continued. "IBM was kind of a natural choice, especially after an ethics class I had that focused on morality in business." Whittle said that the all-too-common notion that big business must deprive individuals of their individuality is wrong. Suppression of individuality "is typical behavior for organizations," Whittle said, "and yet this is something that individuals in organizations have to fight for their very lives."

"IBM was doing a great deal to strengthen the role of individuals within an organization," Whittle said, "and I found that very appealing." He points out that organizations that empower individuals, such as IBM, Hewlett-Packard and Microsoft, are exceptions—a factor that has led to their success.

Radical Views

"I wanted someplace where I wouldn't just be carrying out somebody else's orders," Whittle said, explaining why he finally decided to go with IBM. Earlier, he had turned down an offer

from a tiny, unknown, Utah-based manufacturer named Novell, Inc. "I wanted something that would offer security, but that was entrepreneurial," he said. "IBM was willing to tolerate my radical views on that."

Whittle, it turns out, is full of what some businesses consider radical views. For one thing, Whittle believes that business must ultimately be conducted in "a moral manner," both in regard to the customers, and in regard to the employees. "There's more to life than money-grubbing companies battling it out," Whittle notes.

For Whittle, there's a great deal more. Unlike many workers caught in the corporate whirl, Whittle demands time for his family. Like many of the Mormon faith, Whittle sets aside specific periods of time just for his family—time that they all use to be together, grow together and learn to know each other. Family time is when the Whittles use the trampoline that has become a prominent feature in their Montgomery County, Maryland, backyard. Learning to bounce skyward together had brought the family closer together in ways that most families never know.

Working with his church is also special to Whittle. Among his responsibilities, he has been a Mormon bishop for two years and he works hard for the youth of the church. Recently he led a youth group on a 21-mile "pioneer trek." Over the course of a weekend in June, he and several youths pulled hand carts across rugged terrain, camping out along the way, mirroring the travels of pioneer Americans as they worked their way West.

The Moral Corporation

Whittle believes that IBM is fundamentally a moral corporation. "I have a lot of respect for IBM's basic beliefs," Whittle explains. That also accounts for his delight in the success of Team OS/2, even though he no longer takes a direct hand in running it. He adds that Team OS/2 is successful because its members are individually empowered by goals and values to which they can relate.

This concern about the basic morality of IBM caused him to question the leadership of the largest corporation in history. Whittle finally saw that John Akers was leading IBM astray. "He failed in the most important thing a leader should have—vision," Whittle explained. Whittle believed that Akers was steering IBM down a road traveling away from its basic respect for individuals, as well as from its set of basic moral principles.

Because of his discomfort with the direction in which IBM was heading, Whittle composed and posted a cry of anguish on a company bulletin board. He believed that IBM was heading in the

USER PROFILE

direction of ruin. That the change of directions was one reason for IBM's loss of market share and its fading fortunes world wide. In effect, he called for a cry of "enough!" This act gained notoriety and is often referred to as "leaking the Akers memo." In fact, it was not leaking the famous memo but standing up to it that earned Whittle his spot in Big Blue history.

When Enough Was Enough

It was a timely call indeed. Whittle's cry was answered by others, and those answers were joined by still others. The cries rallied to become a flood of protest against the policies of John Akers. Within hours, Whittle's online memo and its resulting traffic was moved to a special conference area on IBM's internal bulletin boards. Whittle, initially convinced he would be fired for his cry of protest, found instead that he was joined by others throughout the company.

Whittle said his online memo was in response to an earlier (and much publicized) memo from Akers criticizing IBMers for not doing whatever was required to sell more. "His support started to crumble after I lived to tell about it," Whittle says, referring to his memo. Whittle was recalling the fact that his memo and the resulting company-wide criticism of Akers was allowed to circulate freely within IBM. He feels it indicated that Akers' support in the company was already weaker than anyone suspected.

Still, all was not immediately clear for Whittle. "I got back from the trip I was on," he says, "and I wanted to talk to my manager." The response? "My

manager said, 'What I've heard, I don't want to hear any more. What I know, I don't want to know anymore.'" At that point, Whittle realized IBM was just going to let his role in the revolution go.

Ultimately, Akers' support within IBM eroded to the point that IBM's board determined that he could no longer be effective in leading the company, and pressured him to relinquish his responsibilities.

Whittle thinks that ultimately, the company made the ethical choice. The basic values of IBM, including respect for the individual and respect for the customer, were maintained. More important, because it regained its ethical footing, Whittle believes that IBM is now poised to resume its leadership role in the industry.

"He [Akers] wasn't a visionary. He was a manager," Whittle points out. "He tried to maintain the status quo at a time when we needed to free the visionaries at IBM." Whittle says that the visionaries of IBM are now free to see and to dream, and to do it ethically.

Meanwhile, Whittle's dreams have found themselves altered. His role as OS/2 Advocate is taking him to yet new horizons. This month, Whittle and his family will load up their belongings

and head for a new life in IBM's Austin, Texas, offices. There, Dave Whittle will be immersed in the heart of OS/2's development center, doing what he loves best--seeing IBM succeed ethically, and seeing his family grow. ♦

The "Whittle Sandwich."
Top to bottom: Serena,
Andrew (2), Michael (4),
Nicia (7), Jared (9)
and Dave.



MULTIMEDIA

HIGH TECH AT PEARSON HIGH

BY HANK KIEWER

MULTIMEDIA TAKES A GIANT STEP FORWARD INTO THE CLASSROOM, AND PROVES EDUCATION CAN BE AS ANIMATED AS THE STUDENTS THEMSELVES.



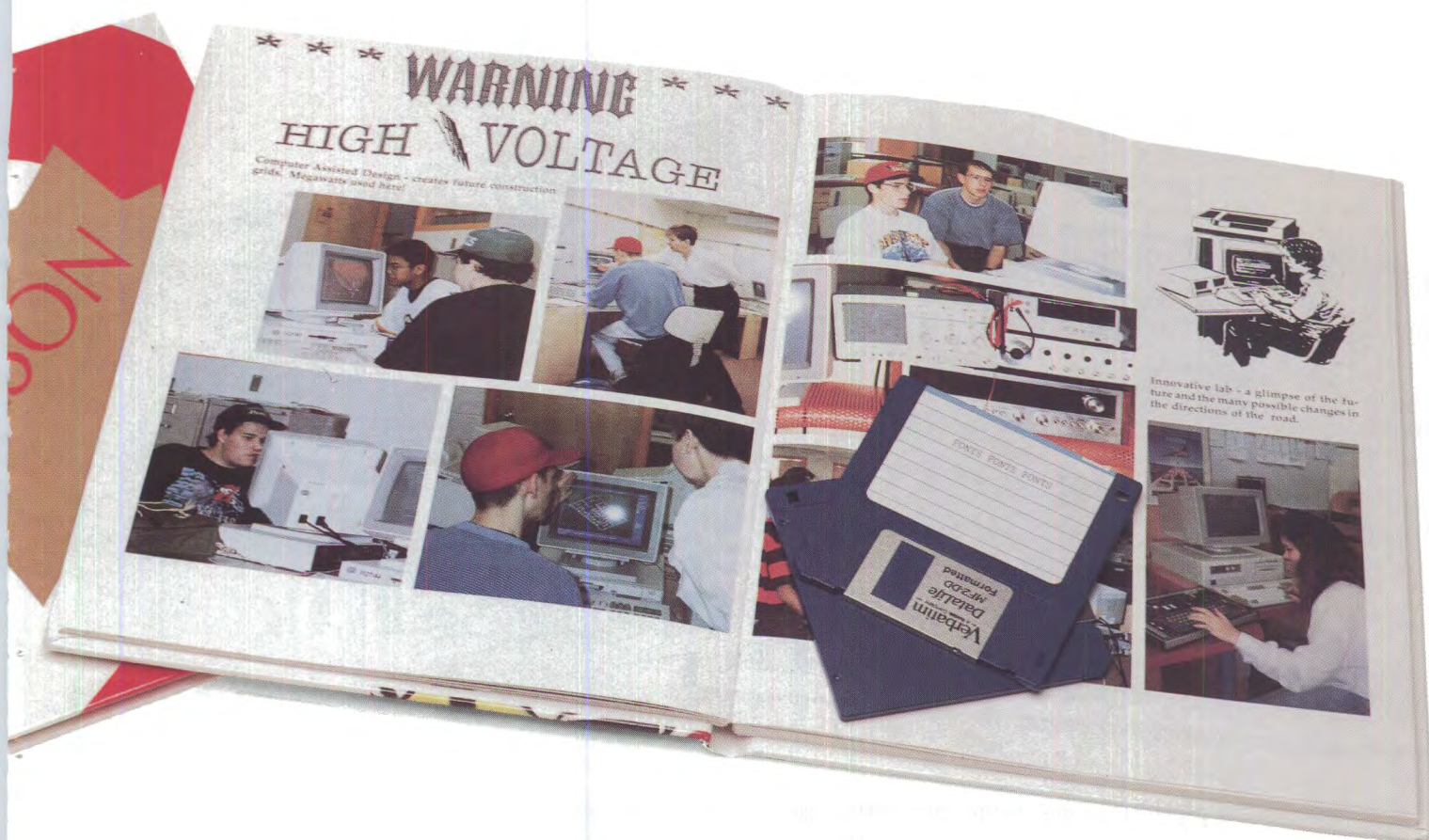
Imagine a high school student presenting a paper on "Birds of the Amazon." But this is no traditional paper typewritten on 8 1/2 by 11 sheets of paper. Instead, the birds appear in full color on a video screen, accompanied by their chirps and songs, as well as the background sounds of their environment.

At Lester B. Pearson High School in Calgary, Alberta, a "paper" of this sort is not unusual. This innovative public high school, opened in September 1991, was designed from the beginning to incorporate the advantages of multimedia into the educational process. The result is an environment in which students and teachers learn new ways to communicate, new ways to work together and, indeed, new ways to learn. As the school embraces this new frontier of learning, other schools in Calgary are working to become part of the process too. In effect, multimedia, networking and personal computers are leading Calgary's schools—especially Pearson—into a new, technology based educational experience.

The Pearson Technology

More than 300 IBM PS/2 computers are networked with eight file servers that access an electronic multimedia library from a 20-





drive stack of CD-ROM readers. Most of the 300 IBM PS/2's rely on the network for access to programs and data in addition to the CD-ROM library. This makes maintenance of programs and information easier and more effective by limiting changes to the files on only eight servers versus having to maintain programs and data on 300+ systems.

Flexibility and ease of maintenance are also reflected in the design of the building. Cable raceways in the floors house the cables for a token ring LAN and a fiber-optic backbone network.

Handling the Information

The advantages of bringing a multimedia library into the classroom are many. Students have access to information from any server in the network. Reference material is never "checked out." Students quickly learn how to search for information from multiple sources without having to rely on busy librarians.

Most students use IBM's Storyboard Live! version 1.0 as their presentation development tool of choice. Storyboard Live! is a DOS-based multimedia development tool that supports digitized audio, MIDI music, animation and video sequences. According to Joe Frank, the assistant principal at Pearson High,

other presentation tools, such as IBM's LinkWay, have been tried, but students seem to gravitate back to Storyboard Live! for most of their work.

Frank said that teachers were initially apprehensive about working with unfamiliar technology, but discovered that students learned the technology quickly from each other and then helped the teachers as well. In fact, teachers and students have now become accustomed to sending files to each other on the servers without shuffling reams of paper.

The Proof Is in the Results

The results have been very encouraging. Joe Frank believes the cooperative student/teacher interaction promotes an enhanced student self-image. He has observed students and teachers working together as a team with students participating in the teaching process while developing and delivering multimedia presentations. In that respect Frank believes that multimedia provides a focus for the kinds of interaction that builds self-esteem and enhances the learning process.

When asked about the progress of students with learning disabilities, Frank said that the teachers believe these students pro-

MULTIMEDIA



duce higher quality papers using multiple resources for at least two reasons. First is the ease of access to resources on the computer network. Second is the spirit of cooperation between peers and between students and teachers.

The students' new skills are attractive to the business community. Sophisticated communication skills, teamwork on complex projects and computer savvy are needed to succeed in the final fast-paced years of this century. In fact, TransCanada PipeLines Limited in Calgary has already expressed an interest in hiring Pearson students for part-time employment in part because of skills arising out of the multimedia program.

Fitting the Program Together

The school maintains a traditional book library as well as its digital one, but it is augmented by four PS/2's, each with a 6-pack CD-ROM drive. Students use these to select from a variety of CD-ROM titles that are not part of the 20-drive stack on the network. One set of frequently used CD-ROM titles, for example, allows students to watch digitized versions of filmed speeches while listening to the voices of the speakers through headphones, sensing the emotion, anger and even the hate from such historical figures as Franklin Roosevelt and Adolf Hitler. Speeches that would be ignored by many high school students, if read from the printed page, are given careful attention at Pearson High. While

the information available on CD-ROM is similar to material students once got from movies or video tapes, on CD-ROM it is more accessible because information can be found more directly on disk.

Joe Frank says his school is part of a larger educational network whose members are hopeful of making multimedia more available. Turning that hope into reality has its own set of problems not the least of which is access to a high-speed data link. Pearson currently has no online video capability to share its network with other schools. It does, however, provide feeder schools with access to a multilist (an online card catalog) of information available at Pearson.

Much work remains to be done to make these capabilities available to other schools. In the meantime, students and teachers from other schools can go to Lester B. Pearson Senior High School to use its facilities.

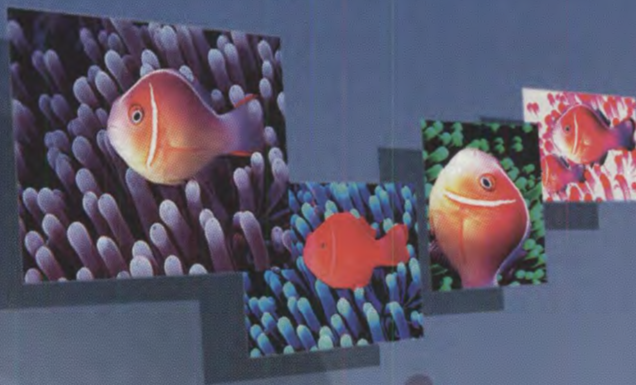
Lester B. Pearson High School serves as an example of the value that multimedia can bring to education. It is just one of many tools that should be exploited in today's schools because of its effectiveness. In an age influenced by MTV, it is difficult to attract and maintain the interest of students. Any technique that captures the attention and imagination of students in ways that broaden their horizons is worth emulating. ♦

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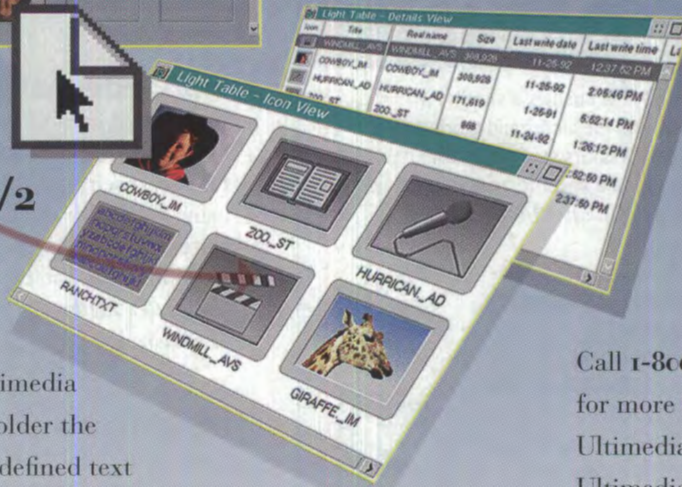
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Circle #87

INPUT

continued from page 14

quality of the OS/2 Professional publication.

Mark Ahlstrom, President

Keller Group Inc.

Stillwater, MN

The FaxWorks program has a couple of major flaws which your reviewer missed [May DOT EXE]. They are:

(1) The output from printing from an application through the "printer-type object" on the OS/2 desktop is NOT GOOD when that object/drive is set for NORMAL fax resolution. Sofnet advises setting resolution to FINE. This does create a good-looking document, but the file is twice as large and takes twice as long to transmit at TWICE THE COST IN PHONE TIME. My company's corporate fax bill is now ~\$500 per month, and we cannot afford to double it.

(2) The output of FaxWorks looks good on standard or normal resolution when one creates it by "pasting" an ASCII file on a blank sheet from the Edit menu. However, the "paste" function fails to correct for the fact that standard 80 column ASCII text lines can vary wildly in length when turned into letters by the OS/2 Presentation Manager.

We have used FaxWorks and its predecessor since October '92 so we are very experienced. I hope that you will publish this letter as a prod to Sofnet to fix these problems to an otherwise OK product.

Fred Perry

Boston Electronics Corp.

Brookline, MA

OS/2 advocate

I'm pleased with OS/2 Professional magazine. We now have a magazine devoted to OS/2 with well-written articles and useful advertisements. May you have continued success. I am using OS/2 2.0 and am a strong advocate of this fine operating system. I started with Version 1.0 and I can honestly say Version 2.0 is outstanding. It works for me.

Gilbert L. Heller

Herndon, VA

Multimedia education

I read with interest Hank Klier's article "Enabling Learning through Multimedia" [March/April Multimedia]. I could especially relate to the limitations of current classroom-style learning and how the inherent advantages of multimedia could remedy those limitations.

My husband and I have a son who is now 14 years old and who struggles greatly in the classroom. He is bright, imaginative and creative, but is not a normal learner. We have been keeping our eyes on the multimedia industry as a possible tool for our son. The fact that he could replay the lesson, repeat it

continued on page 87



Digitalk PARTS Workbench Version 2.0

REVIEWED BY TODD B. CROWE

PARTS is an acronym for Parts Assembly and Reuse Tool Set. This PARTS technology is used within PARTS Workbench, an application development environment, to generate applications without programming. As you might expect from Digitalk, the makers of Smalltalk/V (one of the first object-oriented languages), PARTS Workbench and the development methodology used within it are thoroughly object oriented.

Using PARTS Workbench

Figure 1 shows what a typical PARTS Workbench session looks like. The large window in the upper left is an instance of PARTS Workbench. One of the many sample programs included with PARTS Workbench is displayed within. The long window to the right is the Catalog. The window in the lower right titled "DosBeep" is a running copy of the sample application.

The Workbench is divided into four areas: a title bar and menu, a tool bar for quick access to the most often used functions, an information area (at the bottom) and a Workbench window (center). The information area is one of the nicest features of PARTS Workbench interface.

As you move around the screen, it automatically displays information about whichever object is under the cursor. In Figure 1, for instance, the cursor is over an object that looks like a notebook. The information area describes what the object is used for and that it is indeed a notebook.

For most of your day-to-day work, you will use the Workbench window. You create applications by dragging objects, called "parts," from the Catalog to the Workbench window and then connecting them with links. For example, in the sample program in Figure 1 the **Make Noise** push button is linked to the DOSDLLaccessor part. The green line connecting the two is an event

link. When the push button is selected the clicked event occurs and a **beep: for:** message is sent to the DOSDLLaccessor part. The DOSDLLaccessor retrieves values (via the two blue argument links) for the frequency and duration of the beep, which it then passes to the DosBeep API function to generate a sound. What you see in the Workbench window in Figure 1 is the complete "source code" for an application that generates tones.

OS/2 users will feel right at home with the Catalog, which organizes parts using an OS/2 notebook control. The notebook pages are arranged into functional groups which include the 60+ parts supplied with PARTS Workbench. If you don't like the

layout, you can create new catalogs or modify old catalogs to organize parts in any manner you wish. This sort of functionality is important because PARTS Workbench does not limit you to a fixed library of predefined parts. Rather, you can create new parts from dynamic link libraries (DLLs) written in other languages or from collections of pre-existing parts and links.

The parts themselves come in two forms: visual and non-

visual. Visual parts are objects that become part of the user interface such as frame windows, menus, buttons and list panes. Some of the nonvisual parts, which control internal data handling and calculations, include value holders, computational and conversion parts, a printer part and various accessory parts. Value holders are like variables in conventional programming languages. They hold program values and other state information. The computational and conversion parts provide arithmetic functions and data type conversion. And, as you would expect, particular hardware devices are accessed through corresponding parts

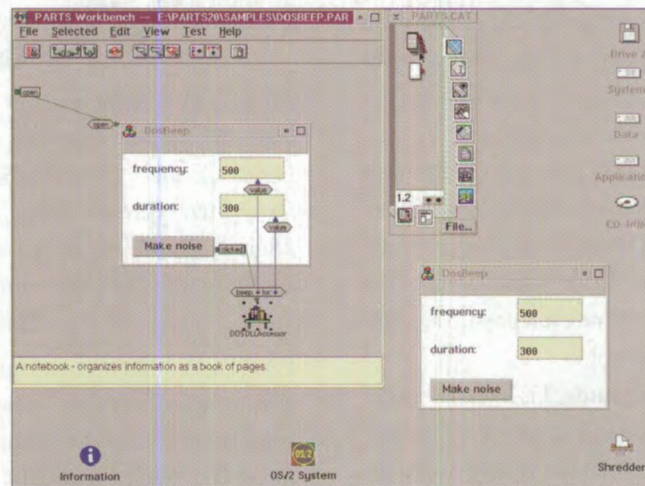


Figure 1. A typical PARTS Workbench session.

such as the printer, timer and speaker parts. A number of accessory parts provide access to important data storage and transfer devices such as files, a Btrieve database, DLLs, DDE and the clipboard.

On some occasions it may not be possible or may be difficult to accomplish a particular task by simply linking parts together. At such times you can turn to PARTStalk, a scripting language which is a subset of Smalltalk/V. The syntax of PARTStalk is quite a bit different from that of conventional languages. It will take some studying and getting used to if you are not already familiar with Smalltalk/V.

Online Help and Documentation

Several forms of help and documentation are included with PARTS Workbench. The printed documentation consists primarily of two softbound volumes: the *User's Guide* explains how to create applications with PARTS Workbench and contains a reference for the standard parts; the *Script Language Guide* describes the syntax for PARTStalk and the classes available to scripts. A third, short volume, *PARTS for Smalltalk/V Developers*, demonstrates the use of PARTS as an enhancement to Smalltalk/V development and also shows how to build parts with Smalltalk/V. In general the printed documentation is well written. Having never used Smalltalk/V before, I found it difficult to try to learn the PARTStalk script language from the manual, however.

In contrast to the printed documentation, the online help needs improvement. It is poorly structured, takes advantage of few of the features of the Information Presentation Facility and provides only a cursory amount of information. Even worse, none of the dialog boxes include any online help. Some even pop up an error (instead of help) if you press F1 to request it.

On the plus side, a three-part online tutorial is included in the online help. It quickly introduces the new user to many of the features of PARTS Workbench. The tutorial is a good place to get started and is well put together, though it is perhaps a bit too short.

To further ease your introduction to the PARTS system, several sample programs are included in the package. These are perhaps the most useful tools included for learning to use PARTS. The samples demonstrate some of the more difficult or intricate tasks necessary for creating complex applications. Unfortunately, many of the samples don't behave properly (intuitively) for common actions. For instance, several sample programs don't have tab stops set, so it is impossible to tab between groups. This may seem like a nit but it is characteristic of PARTS applications. The problem lies in the default behavior pre-programmed into each part. Typically, the default behavior must be explicitly overrid-

den. As a result, more effort is required to generate an application with PARTS than may initially seem necessary.

Requirements

A full installation of PARTS Workbench requires about 8MB of disk space. In addition, Digitalk recommends having at least 8MB of RAM (or 12MB if Smalltalk/V is used concurrently). PARTS does not run well, however, with only 8MB of memory. I experienced nearly continuous swapping when running such a configuration. With 16MB PARTS ran much faster and with no apparent swapping.

One of the primary factors contributing to the large memory requirements of PARTS Workbench and PARTS applications is the set of run-time libraries required during program execution. PARTS will generate stand-alone executables, but the Workbench and the applications require a run-time library composed of seven DLLs. On disk the DLLs occupy over 3MB of space.

Parts applications may be distributed freely in source or executable form. The run-time libraries may also be distributed freely. However, there are some distribution restrictions that apply to applications based on the Btrieve part (a separate DLL is required for such programs).

Support

PARTS Workbench comes with 30 days of free phone support. Thereafter phone support is available for a fee through Digitalk's Direct Connect Extended Support Services. For those who prefer written correspondence, free online support is available via Digitalk's public forum on CompuServe. And for a more personal touch, training and other professional services are also available.

Summary

PARTS Workbench is an innovative product. It promises to offer both programmers and nonprogrammers the ability to develop software in an easy-to-learn, object-oriented, graphical environment. But, while I found the interface easy to use, I found it more difficult to create applications than I expected. There are also a number of annoying problems and shortcomings with the software that should be fixed, most notably the online help. PARTS Workbench will probably find its greatest appeal among users of Smalltalk/V. Developers familiar with conventional procedural languages are probably better off with another tool. ♦

PARTS WORKBENCH 2.0

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(310) 645-1082

LIST PRICE:
PARTS Workbench 2.0
\$1,995

DOT EXE

Chron 3.0 Keeps OS/2 on Time

REVIEWED BY KEN MACKIN

Did you ever wish you could tell OS/2 to perform something later? Like say every two weeks on a Friday? Or even annually? If this rings a bell then run to the phone, grab your VISA card and check out Chron.

Chron v3.0.1 is a 16-bit and full 32-bit event scheduler and timer for OS/2 Presentation Manager. It costs a mere \$69 and a phone call gets you through to the guy who wrote the program with no music-filled wait-states to wade through.

Chron arrives in a simple package with a thin three-ring binder and a disk mailer. The documentation supplied is glib, with short, concise prose that makes installation and configuration a task for network and systems administrators. However, once installed anyone comfortable with Presentation Manager can take over.

Eye of the Beholder

Simplicity is in the eye of the beholder and while Chron is a straightforward product from start to finish, designer Gary Murphy has accomplished some slick programming to make it seem that way. Here is a pure Presentation Manager animal, CUA compliant and complete with DLL, help files, PM menus and pick lists.

The program opens with an Event Dispatcher and a Posted Events Screen represented in two distinct Presentation Manager windows. The Events Dispatcher window is where event objects are defined and scheduled for execution. The Posted Events window displays events that have already taken place, or that have been re-scheduled.

Chron currently manages two event object types, messages and programs, and is clearly designed to handle more as time goes on. A message object is e-mail like. It consists of text that you type in or copy to or from the clipboard. The documentation characterizes this as a mini-reminder pad or an electronic Post-it Note. Program objects will run programs on any valid path, including any arguments such as macro or file names, or configuration switches.

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The installation program left a bit to hope for. There wasn't one available in the package we reviewed (although it should be available by the time you read this), and some knowledge of OS/2 was required to get it right. I put Chron in the C:\OS2\APPS directory but recommend in hindsight that it go into C:\OS2. In the latter directory, Presentation Manager's MIGRATE utility will see it and allow you to incorporate it quickly. I wound up grabbing a program template from the templates folder and filling in the info myself.

Chron is as easy to use as any scheduling program I have ever come across, except that one of the program's ingenuities—non-modal layout—makes it just a little slower to learn than a typical scheduler.

Mixolydian Modes

Nonmodality is a programming style that lets you fill the fields in a data entry process in the order you choose, at any time you choose. In my view, most programs are not designed that way because a little more wit and intelligence are required from the user community. In Chron's case, it can either be a strength or a weakness. It depends on how free you need to be from a modal state, and how talented your users are.

For example, when you are filling out a Chron screen for a New Event, Chron asks you for the title, reminder type (program or message) and frequency. It doesn't ask you for the time or path/filename of the program. Those are identified on separate menus or activated by control keys CTRL-T and CTRL-P. Whether you like it or not depends on whether or not you need the flexibility of nonmodal input or prefer a more rigorous prompting mode. It is still an open question down here in Atlanta.

The program does one other thing differently than most. The Pending Events (not yet occurred) are not treated the same way as Posted Events (already occurred at least once). The number of pending events are shown on a small window known as the Events Dispatcher (ED). The ED gives you no clues about what the jobs pending will do, or how soon they will run. To see that data, go to the Event Change... menu selection in the ED window.

Event Change... offers you the opportunity to view and modify pending events. But if you want to modify past events, you must go to the Posted Events window and edit and reschedule there. If there are any real flaws in this really neat utility program, it is in the way pending and posted events are handled so differently: different methodologies and techniques. Data about an event that hasn't yet happened is, in programming reality, no different from data about one that already has happened. Chron would be more consistent (and hence easier to use) if the methodologies were kept consistent between the two windows.

Still, once you get past this discrepancy, there are a lot of things

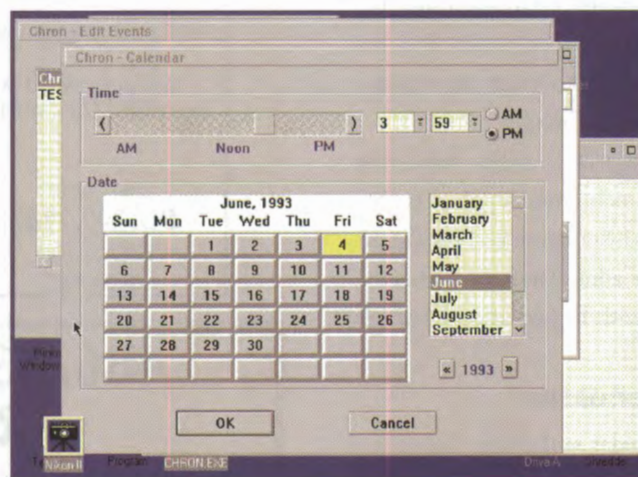
you can do with Chron. Consider for a moment all those poor souls forced to use IBM OfficeVision for the 3270 environment. With Chron, the OS/2 clipboard can be filled with today's OfficeVision e-mail and deposited on your disk for later reading.

Chron can schedule database updates, backups. Anything that can be codified in a CMD file, REXX program or command line. All this makes Chron a simple "must have" for

many users. Hilbert Computing says that a few Fortune 500 companies use Chron to schedule and execute mission-critical functions. I can understand their confidence.

In the OS/2 environment, where so many vendors have gotten cold feet and slim risk profiles, the presence of professionally written programs from vendors such as Gary Murphy of Hilbert Computing is refreshing. If you need system-independent timing and scheduling, Chron may be just the thing to add a punch clock to OS/2 and keep it on schedule. ♦

.....
Ken Mackin is president of Product Logic, an Atlanta-based computer product design and testing firm. He can be reached at (404) 436-0333 or at MCIMail: KJMACKIN.



Chron V3.0

Hilbert Computing
1022 N. Cooper
Olathe, KS 66061
(913) 780-5051
BBS: (913) 829-2450

LIST PRICE:
Chron V3.0 \$69

INPUT

continued from page 82

as many times as it takes, adds tremendous learning value to the concept of multimedia education.

I need a complete, grade-by-grade curriculum package. It could be animated; set to rap or classical; have great graphics, photos, art tutorials, interactive math and English workbooks. It could teach science and history the way you want your kid to learn it, with enthusiasm. It could at least be a pilot program.

My thought is this: If they can do such a fantastic job setting porno to multimedia presentation, why not education? Maybe multimedia education could be part of the "change" we voters are looking for. What if our federal government pooled its fantastic resources, developed such a package and made it available for us. I'd pay some taxes for that.

Carol E. Cole

Boca Raton, FL

[Editor's note: See Hank Klierer's Multimedia column, page 78, this issue.]

Clarifying attendance

Your coverage of the former Window & OS/2 Conference, now Business Software Solutions [March/April Bytes & Pieces], contained some attendance information we would like to clarify. Verified attendance at the January show was 12,500. This represents industry people only, and does not include another 2,000+ registered exhibitors, press and speakers.

In addition, statistics given by our registration company from studies of other shows indicate that actual industry attendance is generally 10-12 percent higher than verified attendance figures released, due to the fact that many attendees circumvent the verification process at the registration doors. Taking this into consideration, actual total attendance at the January 1993 show neared 16,000, compared to a reported, though unverified, attendance at the 1992 show of 15,500.

We welcome the participation of *OS/2 Professional* in the August '93 show, and are confident that our changes will result in a new and improved event for an evolving industry.

KoAnn Vikoran,

Group Show Director

Miller Freeman Inc.

San Francisco, CA

Thanks and kudos

Your magazine just gets better with each issue. I'm still amazed at how well put together it was from the "get go," when some OTHER folks, who've been trying to publish for over a year, still can't seem to get past the "mom and pop" look and feel.

Thanks for your time and trouble.

Marvin Nipper

Compuserve

continued on page 103

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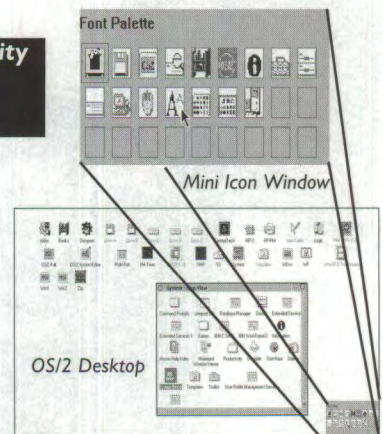
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Product News for the OS/2 User

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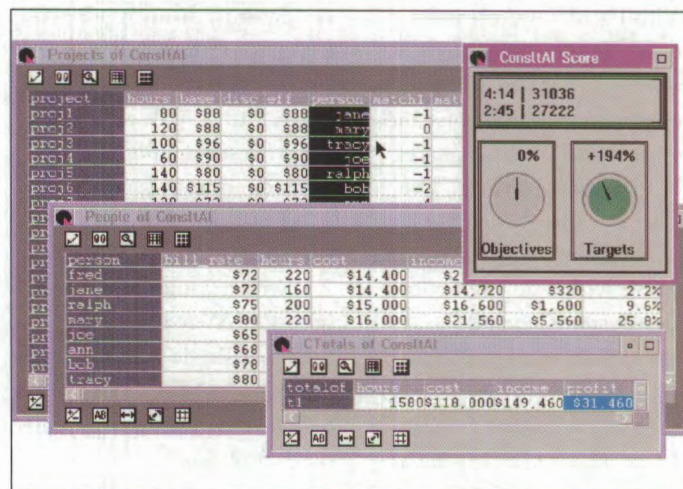
Quantum Leap

Quantum Leap brings an easy-to-use interface to complex modeling techniques. The program, which was unveiled by Quantum Development Corporation at PC EXPO in New York, requires OS/2 2.1 and an 80486 (or better) processor. Quantum Leap was designed to solve problems such as business planning, financial analysis and planning, asset management, resource allocation and scheduling. As anyone who has worked with such models can attest, the methods can be cumbersome and time consuming—and the solution technique one first attempts

may not pan out.

Quantum Leap relieves the tedium by applying one or more solution methods from a gamut of algorithms including linear, nonlinear, continuous, discontinuous, discrete, numeric and/or symbolic. But it all happens behind the scenes—the user need only express the problem (no math or engineering degree required). According to Quantum Development, the patented problem representation technology was made possible by OS/2 2.1's multithreading and 32-bit design.

Not only does Quantum Leap provide a simple, inter-



active interface, it also allows for simple data exchanges between relational databases. If you need the capabilities of powerful spreadsheet-style models combined with analytical ties to database applica-

tions, Quantum Leap may provide the solution to your problems.

Quantum Development Corporation, P.O. Box 970, Claymont, DE 19703, (302) 798-0899.

App development tool works with REXX

A new application development tool operates with IBM's OS/2 REXX to build applications that take advan-

tage of the Presentation Manager graphical user interface.

Available at an introductory

price of \$99 until September 30, VX REXX provides a visual development environment. Software developers working with VX REXX can dynamically create and modify CUA '91 objects at both edit and run time, customize objects and associate REXX code with object events.

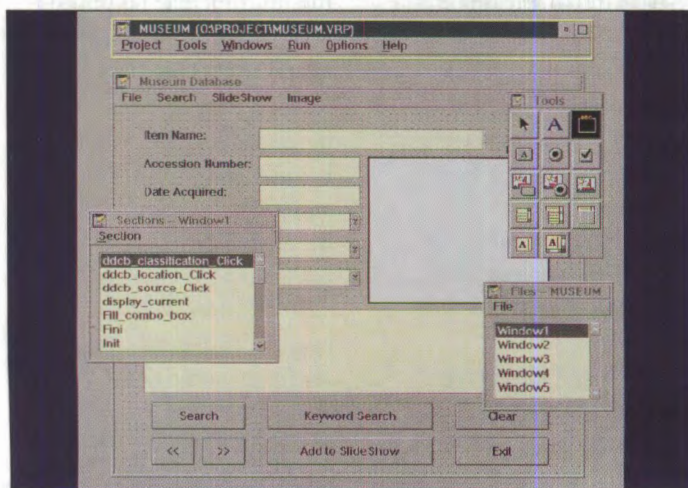
VX REXX includes a project management facility, visual GUI form designer and interactive source debugger. It uses the OS/2 2.x System Object Model (SOM) as the object manager, and supports multithreaded applica-

tions. OS/2 style help and hints are included in the development capability.

User applications are packaged as EXE files or PM macros. VX REXX can be used as a scripting language for "REXX aware" applications such as the OS/2 editor, EPM.

After September 30, VX REXX will sell at a suggested retail price of \$299.

VX REXX was developed by WATCOM, 415 Phillip St., Waterloo, Ontario, Canada, N2L 3X2, (519) 886-3700.



New Products

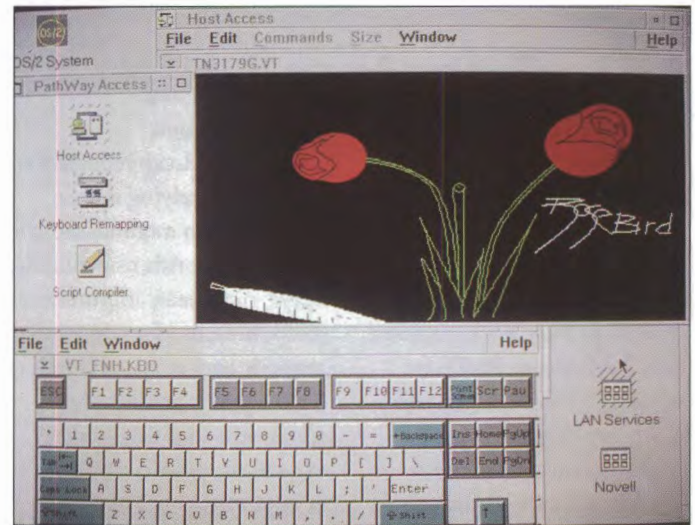
PathWay Access for OS/2 networks

With PathWay Access 2.1 for the OS/2 platform, PCs running OS/2 can access remote host applications and printers and share resources throughout a network. The new product, a suite of TCP/IP applications, is compatible with a range of computer systems, including OpenVMS, UNIX, MVS and VM.

PathWay Access consists of true 32-bit OS/2 applica-

tions for tasks such as file transfer, virtual terminal emulations, printing services, keyboard remapping and script compilation. For LAN users, Pathway Access coexists with several popular network operating systems.

The Wollongong Group, Inc., offers PathWay Access 2.1, which comes bundled with PathWay Runtime, for \$350 per single license. For more information, call (800) 872-8649. In California, call (800) 962-8649.



OS/2 accounting software

Intellisoft, Inc., has unveiled its 32-bit OS/2 version of its Accounting Vision series. Accounting Vision/32 features a suite of high-end accounting modules, including the Vertical Market Toolkit. Business consultants, accountants and resellers are expected to find the Vertical Market Toolkit useful for customizing accounting menus, data entry windows, reports and online help.

Accounting Vision/32 offers database management and retrieval through NetWare SQL client/server technology. All modules provide true multitasking and multi-user support and integration with other software products through dynamic data exchange. Modules are written in C++, using object-oriented programming tech-

niques. Modules are priced from \$995 to \$2,995 each.

Intellisoft Inc., 2114 W. Mayfield, Arlington TX, 76015, (817) 467-7243.

SQL support in KASE:VIP

KASEWORKS, Inc., has announced the availability of SQL support in their KASE:VIP client/server development tools for OS/2 Presentation Manager.

KASE:VIP provides visual design and code generation for building graphics interfaces and client/server environments in standard languages such as C, C++ and COBOL. With the SQL support, KASE:VIP can be used to build client/server applications with complete front-to-back links with SQL databases and graphical interfaces, without the need for user-added code. Applica-

tions built with KASEWORKS tools are free of proprietary languages and run-time libraries, so they are appropriate in mission-critical environments.

With the KASE:VIP open architecture license, developers have access to the core technology. They can customize KASE:VIP to prototype and generate code unique to their environment.

The initial release interfaces with OS/2 Database Manager and Sybase. Drivers for Oracle and other database engines will follow later in the year. Retail price is \$3,995.

KASEWORKS, Inc., 3295 River Exchange Dr., Suite 430, Norcross, GA 30092, (404) 448-4240.

CD-ROM Device Driver for OS/2

A new Mitsumi CD-ROM Device Driver for OS/2 pro-

vides text mode only support for Mitsumi CD-ROM drives. The driver supports multiple drives in any combination, up to four drives per driver. The supported drives are CRMC-LU002S (aka Tandy CDR-1000), CRS-UF1201 (aka DAK \$199 special) and CRMC-LU005S.

Features planned for a future enhanced driver include full audio support, full multimedia and photo-CD support for the CRMC-LU005S and read-ahead caching for all supported models. The current driver is being offered for \$10 plus shipping and handling. The future enhanced driver will be priced at \$25. Users of the current driver will be able to upgrade to the enhanced driver for an additional \$10.

When ordering, specify UPS ground (\$4.95) or UPS blue (\$6.95). Include diskette size.

MARKETLINE

Systems Integration Technologies, Inc., 1280 S. Pow-erline Rd., Suite 171, Pom-pano Beach, FL 33069.

Asynch communications library updated

Greenleaf Software is ship-ping an update for Comm++, the object-oriented, asynchro-nous communications library for OS/2, Windows and DOS.

The class support in Comm++ v2.0 is designed to help developers add new hard-ware, software, protocols and terminal emulation features quickly and transparently. The library accommodates inter-rupt-driven circular buffered service for up to 32 ports at baud rates of up to 115,200. Classes are provided for serial port controls, modem con-trols, file transfer protocols and calculation of check val-ues.

The new release includes prebuilt libraries for Borland C++ for OS/2.

Comm++ v2.0 retails for \$249. Upgrades for Comm++ v1.0 users are available for \$90.

Greenleaf Software Inc., 16479 Dallas Pkwy., Suite 570, Dallas, TX 75248, (800) 523-9830 or (214) 248-2561.

One-Stop Local Bus

Genoa Systems is showing off the latest in a series of VESA Local Bus computer products, a combination local bus con-troller and graphics accelerator board. The M5 Veloce com-bines a five-way multifunction controller and a high-speed

graphics accelerator on one card, which saves space on the motherboard.

The controller can handle two IDE hard drives, two floppy drives, two serial ports and a parallel printer port. The M5 Veloce produces data transfer rates three times higher than the standard 16-



bit ISA bus.

Based on Genoa's Win-dowsVGA 24 video card, the graphics accelerator delivers 24-bit color at high resolution. Like WindowsVGA 24, the M5 Veloce uses a Cirrus Logic GUI accelerator chip, with drivers for OS/2, Win-dows, AutoCAD, AutoShade, 3D studio and others.

The suggested price of the M5 Veloce is \$249, which the company says is about 10 per-cent less than comparable accelerator and controller cards if purchased separately.

Genoa Systems, 75 East Trimble Rd., San Jose, CA 95131, (800) 934-3662 or (408) 432-9090.

New release of FileWorks

FileWorks, an OS/2 point and shoot editor used by

COBOL programmers for Micro Focus ISAM and Nov-ell Btrieve data files, has upgraded the product to ver-sion 2.0.

Features include editing in hex, support for EBCDIC and ASCII character sets and printing records along with the COBOL data names.

FileWorks displays the COBOL data names and the record data using a graphical user interface. The most com-monly used functions are shown as icons.

With FileWorks, you can edit a data file field by field while viewing the data names as defined in the COBOL layout. To begin editing, just double-click on the data. You can also use FileWorks to cre-ate data files, or extract records from one file and save them to another. You can see bad data in a record or build files containing bad data to test your programs for error recovery.

The suggested price of File-Works Version 2.0 is \$199.

Lorill Technologies, 7612 N. Leewynn Dr., Sarasota, FL 34240, (813) 377-5430.

New family of SCSI kits

Future Domain offers a new family of SCSI kits that includes CorelSCSI software. The kits are a result of last year's alliance of Future Domain Corporation and Corel Corporation.

The kits come in three ver-sions, depending upon the SCSI controller included—Micro Channel and ISA 16-bit or 8-bit. They have operat-ing system support for OS/2, Windows NT, Novell Net-Ware, UNIX, DOS and Windows.

CorelSCSI software includes drivers for multiple hard disks, tape and optical devices.

The CorelSCSI kits range in price from \$149 to \$269.

Future Domain Corpora-tion, 2801 McGaw Ave., Irvine, CA 92714, (714) 253-0400.



News

Fischer replaces Huter

The affable Jeff Huter OS/2 media planner for Lintas: New York, shifts portfolios to other IBM projects, including RS 6000, ES 9000 and optical storage. Francis Fischer, who enjoys broad experience with OS/2, replaces him.

Peek to leave IBM

Roland Peek, who successfully operated the OS/2 store at conventions such as PC EXPO and COMDEX, will be leaving IBM in September.

One Up buys Sourcelink

Sourcelink, the source code processor, has been sold to the fast-growing One Up Corporation. At press time, details of the sale had still not been announced.

Q4 coop advertising program planned

IBM is planning a Q4 coop advertising program for developers. The program, still in planning at press time, is designed to promote advertising of OS/2 applications.

Decisions on the use of OS/2 logos and the ability to include references to DOS or Windows have yet been finalized, IBM sources say. But, says a key IBM source, all artwork will have to be pre-approved to qualify for the program.

Interchange switches CD-ROM

The OS/2 Professional Interchange has announced a change in the contents of the CD-ROM being given to all registrants. Cset ++ will not

be included. It will be replaced with a promotional copy of a new product called "The Developer Connection for OS/2," including OS/2 2.1 Toolkit, Pen OS/2 Toolkit and Multimedia Version 1.1 for OS/2 2.1 Base and Toolkit. WordPerfect 5.2 for OS/2 and a selection from Computer Associates' six new OS/2 applications will also be given out. The conference is scheduled for October 17-20 in Palm Springs, California. ♦

Using and Supporting OS/2 2.0/2.1

**A comprehensive support seminar by Mark Minasi, author of the #1 best seller:
*Inside OS/2 2.0***

In this class you will:

- Learn how to make OS/2 2.0/2.1 work on a wide variety of hardware
- Know how to use, customize and back up the OS/2 2.0/2.1 desktop
- Troubleshoot OS/2 2.0/2.1 problems (including the desktop and extended attributes problems)
- Know how to handle DOS and Windows applications under OS/2 2.0/2.1
- Learn how to use REXX to simplify your support tasks

Our seminar offers you a quick start to the new OS/2 and shows your support and technical staff the difficult-to-find and undocumented information that they need to effectively support, optimize and use OS/2 2.0 and 2.1. We've worked with OS/2 since 1987, what has taken us years to research, you can learn about in just **two days** — **in the convenience of your own facility**. We offer unmatched technical expertise in OS/2. Call Donna Cook, our Marketing Director to receive a detailed outline: she can supply whatever information you need.

(703) 276-8940

Circle #21

Other classes available: PC Troubleshooting & Support, Local Area Networks & PC Memory Management



TIPS AND TECHNIQUES

BY GORDON SCOTT

Conventional stress tests will tell you that the five most stressful events include divorce, death of spouse or parent, marriage, change of job and moving. If there were a PC usage stress test, the five most stressful events would probably be the following:

- 1.0 Losing all data on your hard drive
- 2.0 Not saving your work (the one time it mattered)
- 3.0 Using a buggy program
- 4.0 Getting a virus
- 5.0 Printing on a crowded LAN (when you needed the document for a meeting five minutes ago)

And the sixth most stress-producing event would undoubtedly be:

- 6.0 Having an operating system upgrade turn sour on you

Because computer users are so dependent on their operating system, upgrading can be a tenuous proposition for some. After all, no application can be used for "mission-critical" purposes if the operating system itself is in critical condition.

Upgrading to OS/2 2.1 from any other operating system may be the most significant upgrade you will ever make. Forearmed with the right information, this event can be on your list of stress reducers, not stress producers.

Look at the installation README file before installing.

How to do it:

- Insert OS/2's Disk 3 in your diskette drive.
- Edit the file named README.INS using the system editor (or your editor of choice).

Notice especially the section that says:

"If you are installing on a non-Micro Channel (MCA) system...." There are specific instructions for installing OS/2 on an ISA (AT-bus compatible) machine. This section instructs you to adjust three things on your system that will affect the way OS/2 installs. Don't ignore these instructions.

The README.INS file lists a handful of additional obscure exceptions to the installation process. The exceptions probably apply to only a fraction of OS/2 users, but if you are part of that fraction, the information is very important.

Install from a CD-ROM drive.

How to do it:

- Use, beg, borrow or rent one; otherwise, get your purchase order ready.

NOTE: You may want to look for drives with data transfer speeds over 300KB per second. This speed is not necessary for OS/2 2.1, but many multimedia mavens recommend it for tomorrow's video-rich CD-ROM applications.

What this buys you: time and money now, interesting possibilities later.

This suggestion clearly doesn't make sense for everyone, but if you've been thinking about adding a CD-ROM drive, consider some of the benefits. The easiest, quickest and cheapest way to install OS/2 2.1 is via CD-ROM. You not only save a few bucks on the purchase (about \$10), you also save significant time installing OS/2. It takes about 15 minutes to install—with no disk flipping required! Installing from CD-ROM saves you almost an hour. When you consider the value of your time, you can see that purchasing a CD-ROM before installing OS/2 2.1 will give you a

head start toward your return on investment: especially if you must upgrade more than one machine.

Useful (and sometimes exciting) CD-ROM titles are already available with additional interesting and valuable titles appearing each month. Multimedia training and tutorial titles can get you up to speed on crucial technologies quickly. Releases featuring object-oriented design will soon appear for as little as \$200 (less expensive than most seminars or classes you could attend). If you work with the AS/400, you've probably seen the shelves full of manuals for the system. Those manuals cost your company thousands of dollars, yet all are available on a single CD-ROM at no cost for the first CD (and a minimal fee for additional copies). A CD-ROM drive can save you time and money today and keep you abreast of tomorrow's best sources of reference material.

Choose the highest resolution possible for your monitor.

How to do it:

- During installation, select the highest resolution your monitor can handle.

What this buys you: space.

The July TNT column on optimizing OS/2 2.0 for Windows suggested standard VGA resolution as the best option because of constraints on repaint speeds and seamless Windows. These restrictions do not apply to OS/2 2.1. Even a 386 can acceptably handle higher resolutions while running windows applications seamlessly on the desktop.

The promise of better Windows than Windows has truly arrived. Windows programs run smoothly right next to OS/2 programs. With SuperVGA,

8514/A, XGA or XGA-2 resolutions, desktop icons occupy less space, so you have more screen real estate on which to build. You also have more colors from which to choose. And if you want to liven up your desktop, the new background bitmaps look spectacular in 1024x768 with 256 colors.

When upgrading from OS/2 2.0 to OS/2 2.1, avoid redundant desktop objects by not migrating OS/2 programs.

How to do it:

- Deselect the checkbox for OS/2 programs on the migrate applications dialog box.

What this buys you: a little time.

For the uninitiated, "migrating" doesn't mean taking your applications South. Migrating means searching the disk(s) for all executable files and automatically generating desktop icons for them.

When you choose to migrate applications, OS/2 2.1 will create a program object for each executable and create three folders (named DOS programs, Windows programs and OS/2 programs). When OS/2 2.1 creates a new program object during migration, it puts the program object in one of those three folders. However, the third folder may be redundant.

If you are upgrading from OS/2 2.0 to OS/2 2.1, the installation program will preserve all of your unique desktop features. Then, when you first start OS/2 2.1, you will find all your familiar applications just where you left them. So there is no reason to create a separate set of OS/2 program icons and stuff them into a folder.

If you select OS/2 migration, chances are you will waste time by deleting the OS/2 program's folder (and everything in it) since all of the objects probably

duplicate existing objects. Take some advice from the README file and skip the migration of your OS/2 applications.

Be prepared to face good news and bad news concerning two known problems: the blank-desktop surprise and the overlapping-shutdown-window irritant.

How to do it:

- Overlapping shutdown windows (the good news): this problem is only cosmetic. Simply wait until disk activity stops and the outline of a partially covered window appears, then turn off or reboot your system.
- The blank desktop (the bad news): by the time this happens to you, the damage is done. To recover:
 - Insert the OS/2 Installation diskette in drive A and reboot.
 - When prompted, switch to diskette 1; press enter.
 - Press Esc when the grey "Welcome to OS/2" screen appears.
 - Change from A: drive to your boot drive (e.g., enter C: if C is your boot drive).
 - Change directory to \OS2 (i.e., CD\OS2).
 - Erase or rename the OS2.INI file (e.g., enter ERASE OS2.INI).
 - Erase or rename the OS2SYS.INI file.
 - Enter: MAKEINI OS2.INI INI.RC to re-create the user INI file.
 - Enter: MAKEINI OS2SYS.INI INISYS.RC to re-create the system INI file.
 - Remove the diskette and reboot.

What this buys you: two work-arounds to the top two remaining anomalies in OS/2.

OK, I'm being kind. By "anomalies" I mean bugs. In fairness, most users do not experience these bugs. They appear as a result of such complex conditions that the frequency seems almost random.

They remain in the generally available code precisely because of their complexity, though the OS/2 development team has already discovered fixes.

The first problem is really just an annoying graphics quirk—that's the good news. Here's the scenario: you select Shutdown from the desktop pop-up menu, your system closes all applications and displays a "please wait" style message, your hard disk light stops flashing and a larger message window appears underneath the previous message. This second window lets you know that you can now turn the system off—except that you can't read it all because the first window never goes away.

Although this bug makes users nervous about shutting down, it is really nothing to worry about. It represents an innocuous quirk that does not affect the performance or stability of your system.

The second problem isn't so innocuous—that's the bad news. Here's the scenario: you reboot after upgrading to OS/2 2.1. When the reboot is complete, you see a screen that is entirely blank except for a lonely mouse pointer. Pressing Ctrl+Esc brings up an empty task list. If your system ends up like this, the damage is done—your .INI files have become corrupted. At this point, most users usually curse or scream.

Fortunately, OS/2 includes a program and data files for rebuilding your .INI files. (The steps for invoking this program are those listed in the "How to do it" section.) Rebuilding your .INI files, however, rebuilds them with the default settings, not as your previous configuration. So your customized desktop is lost.

Final note: The OS/2 development team had already developed code fixes to these problems by mid-June and made them available for electronic distribution in a file called 21WPSF.ZIP through CompuServe and the IBM PCC BBS—(404) 835-6600 before August 27 or (919) 517-0001, thereafter. ♦



THE LAW

Legislation and Regulation for the Information Age

BY BARBARA OPALL

• **Felony counterfeiting.** Federal prosecutors have obtained the nation's first felony software piracy indictments. A new federal copyright law makes commercial counterfeiting a felony. A grand jury issued the indictments against two Silicon Valley companies and a number of executives, charging that the defendants pirated thousands of copies of Microsoft software.

• **Don't hold your breath.** The highly-touted agreement hammered out between President Bill Clinton and Prime Minister Kiichi Miyazawa in Tokyo in early July is unlikely to benefit the information technology industry. Yet U.S. computer software and telecommunications products have long been excluded from Japan's highly protected marketplace.

Industry observers and government officials say the new framework for bilateral trade talks reached during the Group of Seven summit will skirt the really sensitive barriers separating the economic powers. Instead, sources say the negotiators from the two countries will focus on textiles, heavy manufacturing and other lower-technology industries in attempts to reduce Japan's overall trade surplus and boost imports.

Walt O'Neill, vice president for Federal Sources, Inc., a leading marketing consulting firm in McLean, Virginia, doubts Japan will loosen its stranglehold on the high-technology information industry. "Based upon years of history, I'd put us in the same category as the rice farmers," O'Neill says.

• **Small business contracts made simpler.** Congressional proposals to double, and possibly quadruple, the government's small purchase threshold could simplify the bloated and costly procurement procedures now afflicting small- and medium-sized businesses. The proposal could directly affect purchases of computer equipment and software.

Capitol Hill staffers say raising the threshold from the current \$25,000 to \$50,000 or even \$100,000 would

enable the government to purchase goods and services quicker and less expensively under the more lenient guidelines governing small business transactions.

Sen. William Roth Jr. (R-Del), ranking minority member of the Senate Governmental Affairs Committee, has proposed raising thresholds to \$100,000 and requiring the use of commercial and nondevelopmental items whenever available. A similar proposal in the House by Rep. John Conyers (D-Mich), chairman of the House Government Operations Committee, raises the small purchase threshold to \$50,000 and endorses the use of Electronic Data Interchange (EDI) systems for procurement information.

• **Industry titans push high-definition video technology.** U.S. business and research titans, pioneering the development of high-definition information systems, pitched their case to members of the House Science, Space and Technology Committee at a June 24 hearing of the subcommittee on technology, environment and aviation. Appealing for government endorsement and federal/industry cooperative funding for the new technology were representatives of the "Grand Alliance," comprised of AT&T, the David Sarnoff Research Center, General Instrument Corporation, Massachusetts Institute of Technology, North American Philips, Thomson Consumer Electronics and Zenith Electronics.

Robert Rast, vice president for HDVT development at General Instrument, warned of Japanese dominance in essential technology should the United States retain current television standards forged in the late 1940s.

Established in 1987 in response to a Federal Communications Commission ruling, the "Grand

Alliance" has proposed a single system as the next U.S. television standard.

• **Sweeping proposals for procurement reform.** Sen. John Glenn (D-Ohio), chairman of the Senate Governmental Affairs Committee, continues to push four procurement reform bills introduced in March. Congressional sources say at least two of his proposals could find their way into the FY94 National Defense Authorization Bill. The bill would promote purchases of off-the-shelf software and commercially available hardware.

Glenn's bills call for clearer guidelines that facilitate bidding on government contracts; enforcement of congressional intentions to procure readily available, off-the-shelf items in lieu of expensive and risky developmental products; and a statutory status for protest cases evaluated by the GAO, the congressional watchdog.

• **Computer upgrade for F-16 fighters.** The U.S. Air Force and four allied nations have launched a \$3 billion upgrade to a modular mission computer that serves as the central nervous system for the F-16 fighter. The July 2 decision by Belgium and the Netherlands to join the U. S., Denmark and Norway in the upgrade program will enable F-16 fighter forces to meet advanced threats through 2015, military sources say.

Joe Stout, a spokesman for Lockheed Fort Worth Company, producers of the F-16, said more than 400 planes will be equipped with the new modular mission computer developed by Texas Instruments of Dallas. The computer consists of data processing modules with 32-bit MIPS R3000 Reduced Instruction Set Computer processors, multiplex bus modules, an avionics display processor and driver, all of which operate on an Ada software compilation system. ♦

Barbara Opall is a correspondent for Defense News.

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Foreword by Philippe Kahn, Borland International, Inc.

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By Steve Levenson

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Learning to Program OS/2 2.0 Presentation Manager by Example

by Stephen A. Knight. Van Nostrand Reinhold, \$39.95

REVIEWED BY ALAN JAY WEINER

Graphical User Interfaces (GUIs) are wonderful—they present information in intuitively understandable ways, promote consistent command usage, can be easy for novice users to learn and they simply look prettier than a text screen.

All those warm fuzzy feelings depart the first time you try to program a GUI. It's instant overwhelm. There are so many system calls (Application Program Interfaces, or APIs) to learn before you can even say "hello, world" that it's difficult to know where to start. Presentation Manager, the graphical environment which OS/2 uses, has hundreds of APIs. It seems that to understand one API you must understand others first. But they don't make sense either! It can be a frustrating experience.

Learning to Program OS/2 2.0 Presentation Manager by Example builds an application program, explaining each routine as it is built. While the program is a simple game—the "15" puzzle that we played with as children—there are numerous enhancements to demonstrate Presentation Manager and OS/2 programming techniques. The process is successful. I found the explanations quite educational.

The enhancements include several animated displays, cursor manipulations, time-triggered functions, capturing the desktop screen, help files, multiple threads, menus and icons. Each of these is explained with source code. Even though many of the enhancements are simply vehicles to explain a technique, I found them useful. The purpose of the example application is to learn how it works, not to end up with a product.

Examples assist in learning any subject. This is especially true of programming. The source code to a complete program is a valuable tool. With the descriptions it is easy to understand why a routine is written the way it is and other ways it could be written.

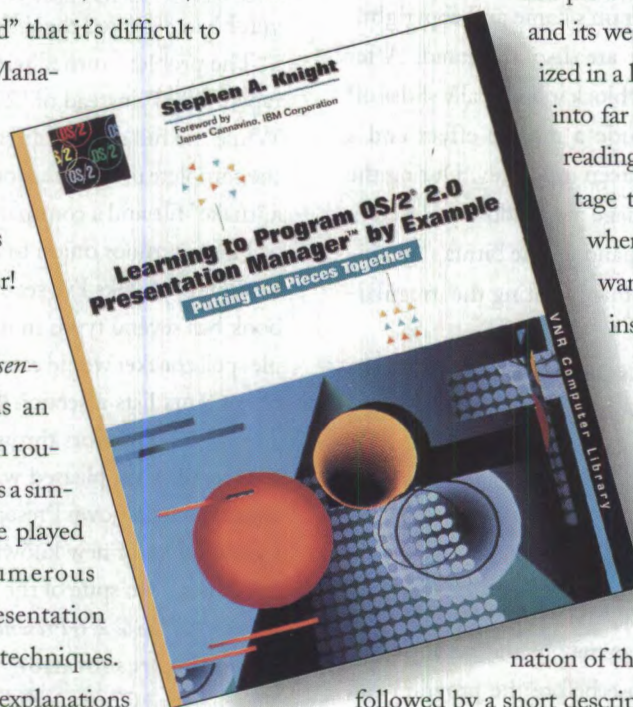
This is a book strictly for programmers. In many cases the explanations become exceedingly detailed descriptions of the source code.

The presentation of this detail is both its strength and its weakness. While the chapters are organized in a logical order, many chapters bog down into far too much detail too quickly. It's slow reading, and can become tedious. The advantage to this presentation, however, is that when I check for references, the details I want are collected together in a logical place instead of scattered throughout the book.

Learning to Program OS/2 2.0 Presentation Manager by Example starts with an overview of the various parts of a window. Here excess detail intrudes—the description of the Maximize/Minimize buttons is almost a third of a page. An explanation of the user's-eye view of the application is

followed by a short description of the tools and command lines used to build it.

Starting with the main procedure, which informs Presentation Manager that it exists and creates the various structures required to communicate between the program and PM, we are treated to complete explanations of what is occurring at each step of the program. Event-driven concepts and the way message loops are used are critical to understanding how to program OS/2 as well as other modern operating systems.



BOOKSTAX

Discussing the various pieces of the standard window, how to control them by sending various messages and how to process mouse and keyboard messages, entrenches us in the window procedures so vital to these systems.

The chapter about screen output routines brings us lessons about device contexts, presentation spaces and fonts. The opening screen of the game shows a grid of blocks, overlaid with the word "SLIDER" displayed at an angle. Displaying the blocks includes loading and displaying bitmaps. Displaying the text demonstrates selecting a font, rotating the text and sizing it to fit the desired area, finally drawing the text in red.

There are numerous methods in the example program simply to demonstrate how to perform such techniques. Several of these pertain to animation. During the start of the game, a number of opening screens are displayed. During one of them, text fades in, is displayed for a while, and fades out. I found this a particularly attractive means of displaying a program's name and copyright.

The blocks and "SLIDER" text are also animated. After they've displayed for a moment, each block individually slides off the screen. Other animations include a mosaic effect and a grasshopper that moves across the screen randomly. During the mosaic, small pieces of the puzzle image are randomly placed in the application window. Here we expand on the bitmap manipulation we learned earlier, including manipulating the irregularly shaped grasshopper.

When playing the game, the mouse pointer changes to indicate the direction that a block may be moved. Thus we learn about icons and the icon editor. As these are handled as *resources*, we learn about the resource compiler and resource scripts. Menus, accelerator keys and the bitmap images of the blocks and grasshopper are all resources.

Message and dialog boxes are used to display error messages and set operating parameters. Dialogs may be modal or modeless. Modal dialogs require a response before the program can continue. These are the typical "error" message boxes, which require an "ok" before continuing. Modeless dialogs appear to operate independently from the main program. Only modal dialogs are demonstrated. I would have liked an example modeless dialog box also.

OS/2 supports multiple threads and processes. These are demonstrated with the animated grasshopper and the routines which scramble the initial picture. Use of the DosSleep function, timer messages and multiple threads are explained.

Finally, as any program should, the game includes help. Implementing help involves using the Information Presentation Facility, and covers headings, hypertext links, formatting text and menus. Links between the program and the help interface demonstrate context sensitivity.

A short chapter touches briefly on some of the new enhancements for version 2.0 of OS/2. File and Font Dialogs, Value Sets, Sliders, Containers and Notebook Controls have about a page each. Their capabilities are described, but there is no sample code showing their usage.

The two appendixes contain 50 pages of listings. While they do need to be provided, they end up being redundant. The important sections have been printed in the body text near the descriptions of the functionality.

A diskette included with the book contains the full source code to the game. Initially, I had problems compiling it and making it run. While it afforded me additional experience with the debugger, I had expected the diskette to work right off.

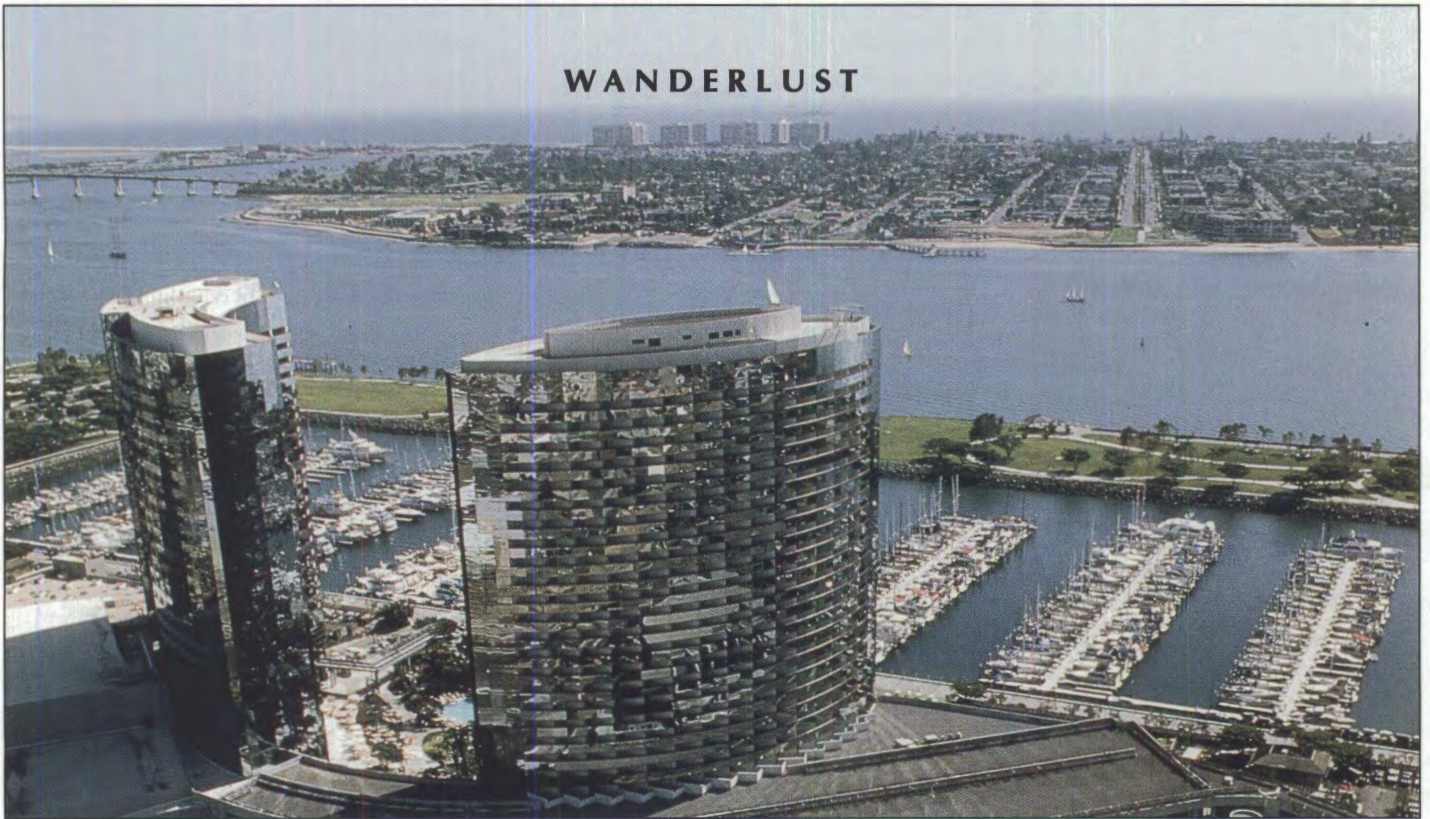
The problem turned out to be my fault—I had inadvertently typed "2000" instead of "20000" when specifying the stack size. While the full source files are supplied, the instructions to build the complete program are only printed in the book. I feel that both a "make" file and a command file should be included on the disk.

I have a minor onion to throw at the publisher, which applies to all of the books I've seen from Van Nostrand Reinhold. Each book has several typos in it. They're usually obvious, and a simple spell checker would catch most of them. In this book, the table of contents lists a section "Speical (sic) notes about this book!" Typographical errors throw a pall on the valuable information.

Overall, I am pleased with this book. Since I primarily write system code, my own Presentation Manager skills are rather hazy. I gained a lot of new knowledge, and understand PM programming better. In spite of the slow reading, I recommend *Learning to Program OS/2 2.0 Presentation Manager by Example* for anyone learning Presentation Manager programming. (Read March/April Code Cache first, though!) It's not a replacement for the official technical documentation. There are many APIs not covered, but it's a good place to start understanding Presentation Manager programming. Just don't plan on reading it the weekend before starting that big project! ♦

Alan Weiner is president of Technology 21, a consulting firm located in Waltham, Massachusetts. While software development is his usual pastime, recently he's been maintaining "wetware" in the form of his newborn daughter, Katherine Ruth.

WANDERLUST



Favorite Business Hotels

Three stars...four stars...five stars. Everyone has a personal rating system and it's really all a matter of need, priority and taste. Here are some personal favorites.

BY EDWIN BLACK

San Diego Marriott Hotel & Marina.

The curved twin towers of this hotel stand like majestic sentinels over San Diego Bay and its private marina. Request a room or suite (no-smoking available) with private balcony. From this vantage point, early risers can observe Navy ships steaming out to sea at dawn. And for those who can't abide the rising sun, relax on



your balcony with a refreshing drink at sunset and watch colorful sailboats as they return to harbor.

The lively lobby, gateway to the North and South Towers, bubbles with activity day or night. Interesting shops, the Marina Sea Grill and lively sounds from DW's Pub beckon.

Inevitably, San Diego's ideal climate will lure you outside. Whether you're a swimmer or a sunner, be sure to lounge by the hotel's magnificent free-form pool, with its adjacent waterfalls and "caves." For a change of pace, temporarily vacate your chaise and meander through Seaport Village, a nearby plethora of shops abutting the marina.

San Diego Marriott Hotel & Marina, 333 West Harbor Dr., San Diego, CA 92101, (800) 228-9290.

The Drake, Chicago.

The grandest of the grande dame Chicago hotels might just be the Drake. Renowned for its spacious, old-fashioned rooms, its

WANDERLUST



The Drake is the jewel of Chicago's Near North "Magnificent Mile."



A glass elevator ride at the New York Marriott Marquis whisks guests through the world's tallest atrium.

magnificent chandeliered and fountainesque interior design, its gourmet restaurant and its white-gloved service, the Drake is a legend among hotels.

Dominating the Magnificent Mile, overlooking Oak Street Beach, across the street from the chic chic Rush-Oak neighborhood, the Drake is "the address" in Chicago for the visiting executive. Frequented by the captains of industry and the old monied social elite—as well as an irrepressible crop of prom kids—the Drake pretends to be young at heart, but is really quite set in its ways. You'll find overstuffed furniture, mammoth armoires, renovated but cramped bathrooms, and long—very long—corridors.

Its restaurants are sumptuous. Afternoon tea is a classic. The Cape Cod Room has for decades been considered Chicago's finest and most heralded seafood restaurant. And in-room dining at the Drake is an art.

Suites at the Drake are as much as a half-block long. If at all possible, try to secure one overlooking North Lake Shore Drive.

Without question, the Drake is a place to do business in the grandest style—and with all the trappings. Remember, when giving your address, "I'm staying at the Drake" is all you need to say.

The Drake Hotel, 140 E. Walton Pl., Chicago IL 60611, (312) 787-2200.

Marriott Marquis, New York.

In a city known for bad hotels and elegant hotels, but very little in between, the Marriott Marquis is a welcome address. Its beehive location on Times Square makes it a quick cab downtown or uptown. Broadway's theatre district is just outside.

The Marquis' service ethic puts many other New York chain hotels to shame. There is always a hotel staffer to help out, wherever you are in the hotel's massive innards. Impeccably maintained despite the outside Times Square environment, the Marquis almost becomes a refuge from the city when guests cross the threshold.

Rooms are well appointed, exceptionally spacious and only moderately expensive for Manhattan. River views and skylines are offered outside almost any room window.

Ascending the towering atrium lobby in glass elevators is itself a flight of fancy—unless heights terrify you. A central calling card of the Marquis' pop kitsch design, the overburdened elevators are almost always delayed. So guests learn to come and go from their rooms infrequently.

The Marquis' several restaurants provide excellent food in a

WANDERLUST

variety of price ranges—generally steep. Once upon a time, they had a fine haute cuisine restaurant, called J.W.'s. Now it's a chop-house. It might be a better idea to head across the street to any of the fine small restaurants, including Dean & DeLuca.

The Marquis is, of course, a giant convention hotel. Its turnover is staggering as convention after convention brings thousands to its doors daily. As such, it is a marvel that so much can be done so magnificently for so many at such a reasonable price. The Marquis is a good place for business at a liveable price.

Marriott Marquis, 1535 Broadway, New York, NY 10036, (212) 398-1900.

Sheraton-Boston Hotel & Towers.

Sheraton planners touched almost all bases with this one. Location—in the heart of Copley Square—and directly connected to both the Hynes Convention Center, the Prudential Center and the upscale Copley shopping arcade—is choice for visitors on business or on pleasure. Size—large, but with an intimate alternative in the Towers, where registration is personal, private and

efficient. The lobby, boasting marble floor, Aubusson rugs and exquisite chandeliers, bustles with all manner of activity. For example, an open lounge is available for sitting, sipping and chatting, and sounds from the disco echo into the wee hours.

Tower rooms and suites are particularly spacious and amenities abound. Tastefully appointed in traditional furnishings as befits Boston, each room is a quiet respite from the rigors of meetings or shopping. Service is superior and never intrusive. Tower guests enjoy complimentary Continental breakfasts in a glass-walled room high over the city. More than coffee and a roll, the chef prepares several specialties, heaps marvelous fruits from around the globe on crystal platters and displays everything beautifully. The only problem may be adhering to one's diet. Afternoons, breakfast fare is replaced by finger sandwiches, hors d'oeuvres and munchies.

This Sheraton is a star in Sheraton's multi-studded crown.

Sheraton-Boston Hotel & Towers, 39 Dalton St., Boston, MA 02199, (617) 236-2000. ♦

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continued from page 87

Thanks and kudos

I have been receiving *OS/2 Professional* ever since its inception. I am delighted to see that the articles are improved with each subsequent issue. The earlier Window bashing tone was really infantile. With excellent and objective articles such as Tyson's Borg report [May Special Report] and Zachmann's View, you are earning the right to your title, Professional. Good luck.

Fook H. Eng
Monterey Park, CA

I find *OS/2 Professional* an extremely helpful magazine. Information is provided, both in the articles and in the advertisements, that is very difficult to find elsewhere.

Keep up the good work, and may advertisers flock to you so that information on products for OS/2 may be easily found and so that you can expand your excellent features.

Robert W. Duvall
Richmond, VA

Thanks for a good OS/2 magazine. I especially enjoy TNT as its format helps me learn better ways to use OS/2.

John Dvorak's article [March/April Dvorak's View] was interesting, but who does he think is his audience?

There are lots of ideas that we as users know IBM should or could do better, but they don't seem to be listening.

The Networking Option article [March/April Connectivity] was very informative as far as it went. I want more data on connecting to a Sun UNIX system.

Ramer W. Streed
North Mankato, MN

Boot the bashing

I am a software developer who has used Windows since version 1.0, OS/2 since version 1.0, NeXTSTEP since version 1.0 and Windows NT since the July 1992 Preliminary Version—I guess I am a bona fide "early adopter." After reading the May issue of *OS/2*

Professional, I decided to complain about all the Microsoft (specifically Windows) bashing. But the interesting thing is: I find it all so amusing, I guess I can't really complain.

In the end, we are all free to choose the operating system which serves us the best. And if one is more popular in the marketplace than another, that is fine. I spend my time developing applications which (hopefully) will empower users; applications that they will enjoy in their work. If my application is good, users will buy whatever operating system my application requires. And isn't that what it's all about, putting all that silicon on your desk to work?

Scott Collard,
Lead Software Developer
Dean Witter Reynolds Inc.
Sacramento, CA

A floppy solution

The complaints of your unhappy user, Saulius J. Skeivys, MD, [March/April Input] sound a little like the problem I had. Dr. Skeivys had his installation fail on about the ninth diskette. I never had a problem accessing floppies under DOS, except Fastback would occasionally fail and it could not format 720K diskettes. Originally, problems with the

floppies under OS/2 were minor, but the difficulties became temperature sensitive and then solid. Backing up an HPFS partition and reinstalling OS/2 were problematical. By extreme measures—such as booting DOS from a floppy in the middle of the install to duplicate the installation's CONFIG.SYS—I had managed to get a beta version of 2.0 installed, but I never managed to get the original commercial version up.

The floppy problem—as well as several others—vanished when I replaced the multifunction adaptor. The new adaptor is a brandless Taiwanese thing that cost less than \$20, but it works.

Henry E. Thomas Jr.
Ypsilanti, MI

Carpal tunnel

Your recent cover story on carpal tunnel syndrome (CTS) mentioned the Computer Injury Network as a place to get more info on CTS [March/April Special Report]. How do I reach them?

Chris Brookins
Cambridge, MA

[Editor's note: Ms. Samantha Greenberg of the Computer Injury Network can be reached at (310) 207-1653.] ♦

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LET THE CHIPS FALL

Multimedia in Our Future

Multimedia is the most exciting new wave to hit the computer industry. With faster microprocessors, larger memory capacity and higher density disks, the computer's talents for entertainment, training and intellectual stimulation continue to challenge our imagination and growth.

The CD-ROM is one important key to this upward spiral. As anyone who has installed OS/2 from CD-ROM can tell you, this simple device can change your life. As operating system and application capacities soar, the speed and convenience of installation from a single disk make CD-ROM technology a valuable investment. Indeed, consumer recognition of such advantages have made sales over the last year soar 100 percent to a total installed base of 5.5 million.

Once the CD-ROM is on the system, users quickly discover the new wealth of information at their finger tips. Colorful, dynamic and audible—multimedia mania is sweeping across desktops from home to office. I've seen the titles that pass through our company on the way to user's desks grow and evolve—from the beginnings as DOS-based references in raw-text format to more polished graphical products running on the Macintosh and Windows. And while one critical application or reference may spur the initial purchase of a CD-ROM drive, the user soon discovers new horizons. Indeed, our research shows that the average person buys 12 titles for every drive sold.

As widespread as CD-ROM has become, for multimedia applications to truly thrive both CD-ROM drives and sound cards must come as standard equipment on the most popular computer systems. The technology is affordable, but computers have been driven into a commodity market where price, rather than value, has become the overriding concern. But a computer is still a fairly sizable investment by anybody's measure. It behooves both buyer and seller to consider how the system will be used not just this year, but for the next three to five years.

Forward-thinking buyers already realize that a CD-ROM drive is an investment in the future of their system. What the market as a whole must recognize is that CD-ROM is an investment in productivity: reduced software installation times, quick and convenient access to reference information and an educational aid that can reduce off-site training sessions.

Today's 386 and 486 systems are just beginning to tap the potential of multimedia. One of the hot new Windows multimedia applications, Twain's World, shows Mark Twain smoking his trademark cigar while strutting for the camera (reportedly operated by Thomas Edison). With the new Pentium computers coming out this year, leading-edge OS/2 users will be primed for the next burst of multimedia growth.

OS/2 has always been the most convenient platform for uniting DOS, Windows and OS/2 applications. It has been the only operating system that saves time and money by running existing software while providing a growth path to the next generation 32-bit applications. OS/2, with the help of MMPM/2, already coordinates sound and real-time video. Pentium will make it better, stronger, faster.

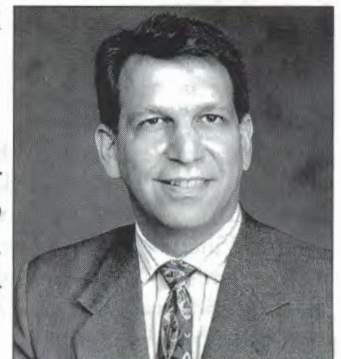
As Macintosh and Windows developers have already discovered, the key to a successful operating system is to make it fun, charming and enticing. Each new operating system ups the ante: Macintosh started with a friendly interface and Microsoft added cute games. Now dazzling colors, digital sounds and multi-megabytes of CD-ROM data raise the stakes. Don't underestimate the power of a simple statement, "Hey! Look what my computer can do!"

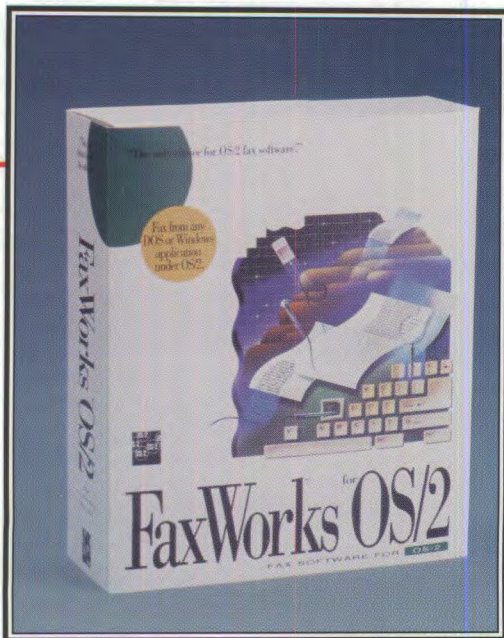
It is time for OS/2 to move away from an image of a niche operating system that handles elitist and bureaucratic technology such as client/server, database and mission-critical development. While these may be important virtues, they lack glamour. Multimedia can peel back the old, stodgy layer of industrial-strength techiness that has long draped over a charming personality. OS/2 has been a diamond in the rough. CD-ROM is the chisel and multimedia developers are the cutters who will fashion a beautiful gem that users can enjoy and wear proudly. ♦

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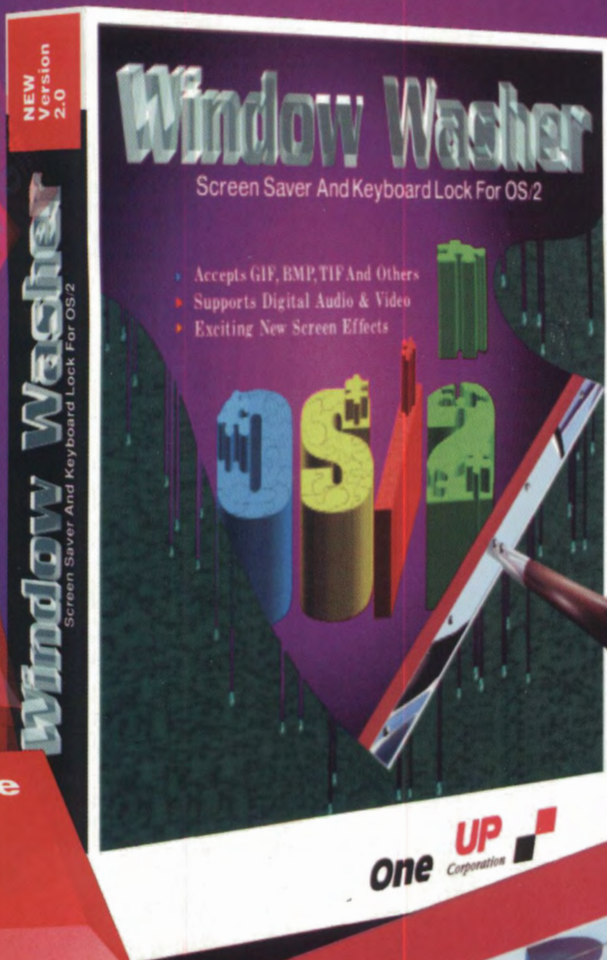
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